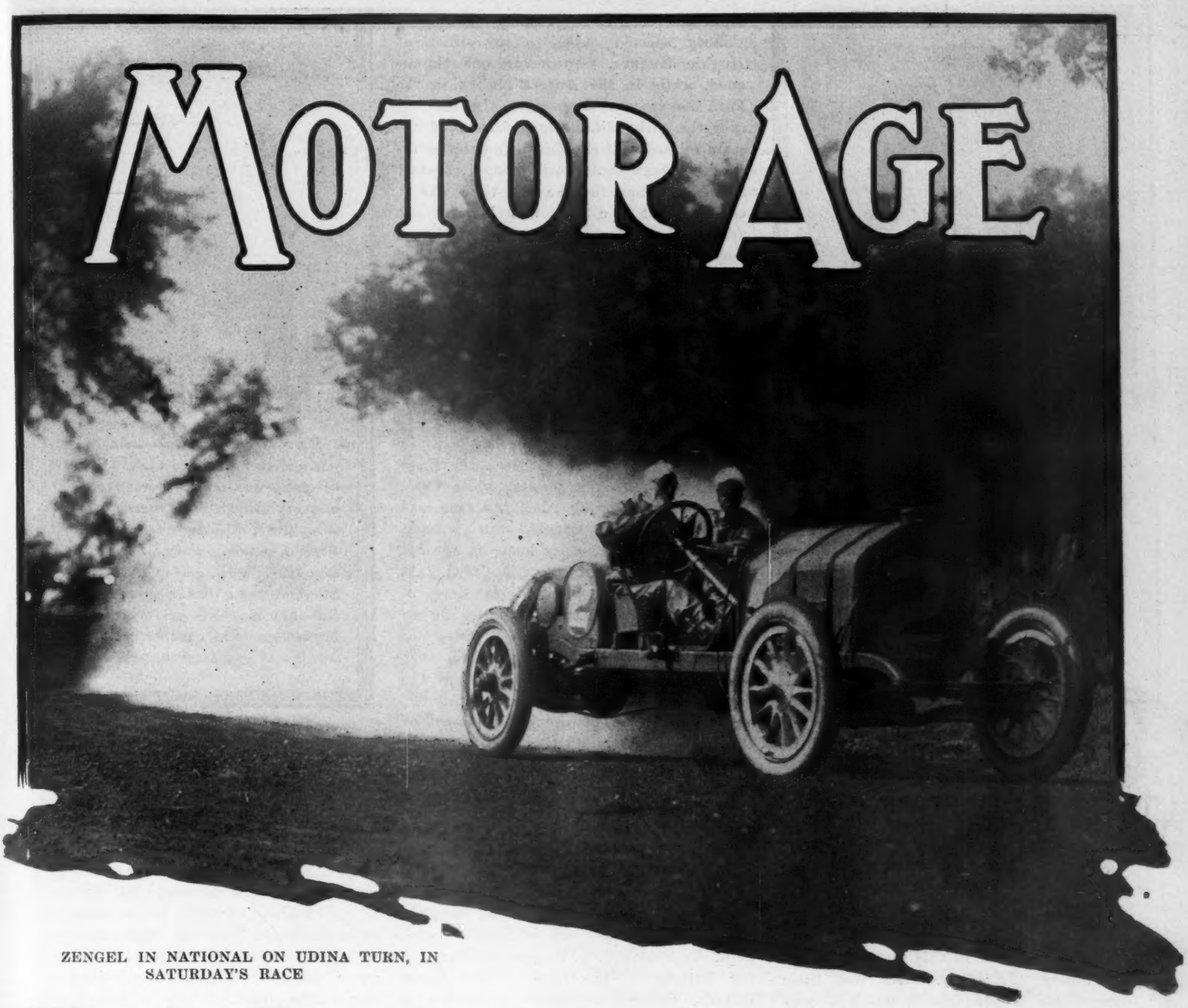
VOL. XX, No. 9 CHICAGO, AUGUST 31, 1911 $3.00 PER YEAR

MOTOR AGE



ZENGEL IN NATIONAL ON UDINA TURN, IN SATURDAY'S RACE

Elgin's Big Cup Captured by Zengel

National Cars Win Two of National Road Championships, Herr Getting Illinois Trophy—Hughes in Mercer Takes the Kane County and Is Third in Long Grind—Roberts in Abbott Lands the Aurora—Course Records Broken in Three of Four Events—Buck and Mechanic Jacobs Killed in Accident—Grand Stand Collapses

CHICAGO, Aug. 29—The third renewal of the American Automobile Association's national stock chassis races, run Friday and Saturday over the 8.5-mile circuit at Elgin, which was the scene of the same speed battle last year when the Chicago Motor Club first handled the classic, was marked by at least one surprise, while the keen edge of sporting interest was dulled to a certain extent by accidents—first the falling of ten sections of the grandstand and then by the accident which resulted in the death of Dave Buck, driver of Pope-Hartford No. 3, and his mechanic, Sam Jacobs, in the big race.

The four events that were contested returned as winners Len Zengel in the National in the Elgin National; Donald Herr in the National in the Illinois; Hughie Hughes in the Mercer in the Kane County, and Mortimer Roberts and the Abbott-Detroit in the Aurora cup. In three of these events the course record was smashed, and the entire meet was remarkable for the speed shown, the comparative freedom from tire trouble on the part of all the contestants with but one or two exceptions; the able manner in

Len Zengel

Zengel, winner of the Elgin National, is a new driver on the National team but he long has been a most consistent performer in road races and in hill-climbs. His greatest performance prior to last week was in last year's Fairmount park road race which he won in a Chadwick in a remarkably close finish with Mulford.

which the Chicago Motor Club ran off the meet, and the immense throngs that lined the course, testifying to the popularity of the sport in the middle west. It is estimated that at least 40,000 people watched the first day's sport, while on the second day this number was more than doubled.

In a nutshell this tells the story of a meet that rivaled in excitement any that ever has been run in this section. As to the racing end of it, there was little competition in the four events and only in the Illinois was the finish at all close, and in that it was a case of two teammates fighting for the cup and being separated only by 9 seconds. The Kane County seemed made to the order of Hughie Hughes, who never was threatened, while in the Aurora Kulick in the Ford never was dangerous. In the big race the early elimination of most of the stars robbed that classic of its chief interest, although not until Zengel flashed across the tape for the last time was it certain that the cup was his. Grant and Hughes were so close to him that a stop of any duration in the final stages might have changed the results. In this race the contest feature was the fight for second place between Grant in the Alco and Hughes in the Mercer, and at the end only a matter of 11 seconds separated the two.

Elgin National Results

Ten of the twelve entrants in the Elgin National started and of these only three were caught by the judges, while there still was one running when the race was officially ended. Zengel, the winner, averaged 66.45 miles per hour, as against the 62.5 miles per hour of Mulford, last year's winner. In the Illinois Herr, in the National, won the 202 miles at an average rate of speed of 65.6 miles per hour, and of the four that started, only the two Nationals caught the eyes of the judges. The Kane County brought out the biggest field of the meet, eleven of the sixteen entries starting and seven of them finishing, with Hughes showing an average of 63 miles an hour. The Aurora cup brought out all three of its entries and all three finished, with Roberts in the Abbott-Detroit averaging 53.5 miles per hour.

The accidents that marred the meet to a certain extent came the second day, although the first was not without its mishaps. On Friday F. E. Radina, mechanican for Raimey in the Cino in the Kane County, suffered a broken ankle, while Robillard, driver of one of the Stavers, had a close call when he hit a telegraph pole, cutting it down. But it was the

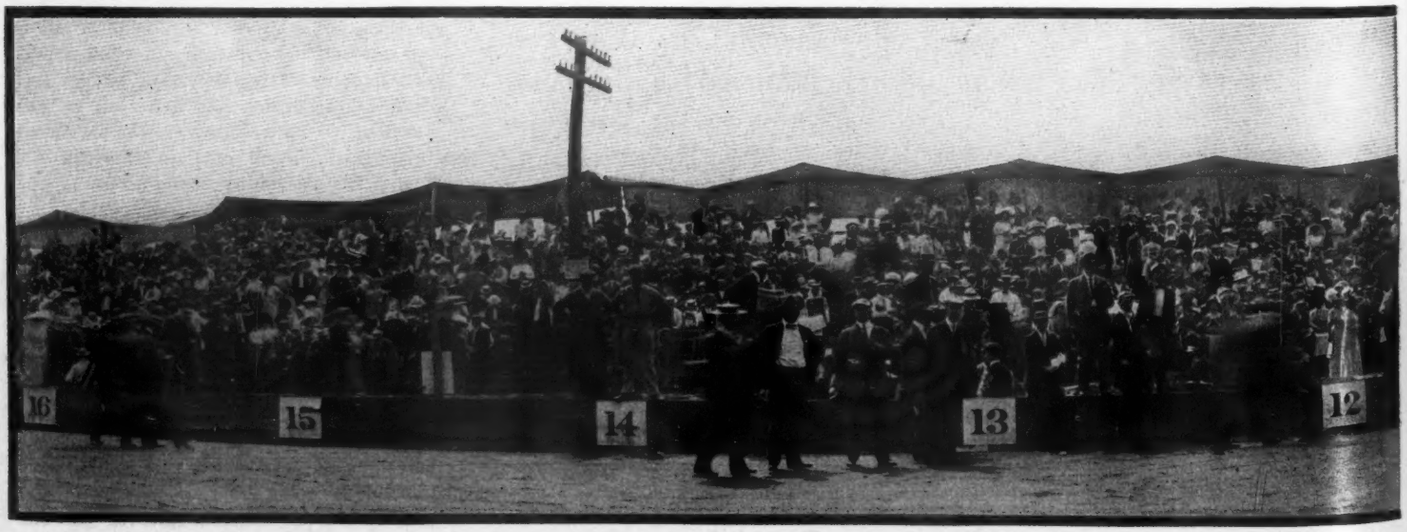
Donald Herr

Herr is one of the numerous youngsters of ability the National company has on its racing staff, and has climbed to the top along with Merz, Wilcox and the late Tom Kincade. Herr, before he won the Illinois, had achieved considerable fame on the speedway at Indianapolis. His performance at Elgin stamps him as a most likely driver and one of great promise.

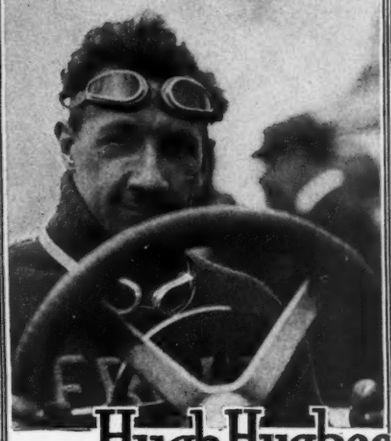
second day that was blackest, and that there wasn't a long death roll as the result of the falling of a section of the grandstand was a marvel. The day started most auspiciously—weather made to order, immense crowds, perfect control in handling the crowds and intense interest among the spectators, who filled the stand to its capacity of 6,600. The ten candidates for Elgin National honors had come to the tape, had been lined up and sent away on their 305-mile run when the accident occurred.

Fall of the Grandstand

Grant was about due to show above the crest of Britten's hill, just west of

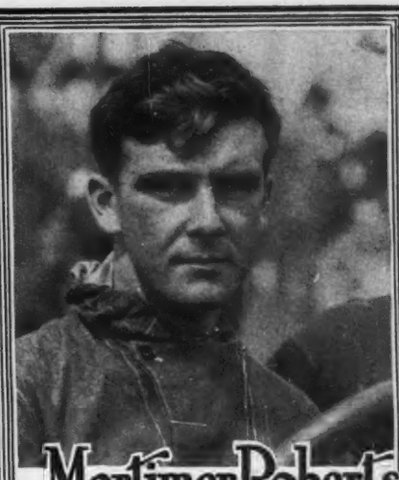


SCENE AT STARTING LINE, SHOWING CARS LINED UP FOR ELGIN NATIONAL RACE ON SATURDAY—PHOTOGRAPH



Hugh Hughes

Hughes, winner of the Kane County cup and third in the Elgin National, is a veteran like Zengel and has done considerable dirt track racing in his time, a game at which he is particularly good. Last year he drove for the Falcar and did good work. He joined the Mercer forces this spring and since then he has done particularly well with the Mercer.



Mortimer Roberts

Roberts, winner of the Aurora cup, is a brother of Montague Roberts of New-York-Paris fame but his reputation is not built on that. Mortimer drove in two of the big gest road races last year. In the Massapequa cup on Long Island he was second in the Abbott, while in his class in the Fairmount park road race he was runner-up to Padula in an Abbott.

the stand, and the spectators stood up to watch him come over the brink. Then came the crash. Possibly the swaying caused by so many people standing at once started the trouble. The west section started to fall, or rather drop, the next followed suit, and like a house of cards the western quarter of the stand went to the ground. It wasn't a terrifying sight to watch, either, for the fall was so gradual that one hardly appreciated the gravity of the situation. The spectators for the most part were so pinned in they couldn't jump if they wanted to and the big majority sat in their seats and waited for the inevitable. There wasn't much confusion about it, either, and the people in the east end of the stand hardly knew anything had happened.

In all probably 600 people fell with the stand, and of these only forty were treated by the physicians who were on duty. The most serious injury was a broken leg sustained by one of the women spectators from Valparaiso, Ind, although three others had fractures that sent them to the hospital, one of the three being the daughter of Senator Lorimer. Probably fifty others were bruised or shocked, but none of them so badly that they had to call on the physicians.

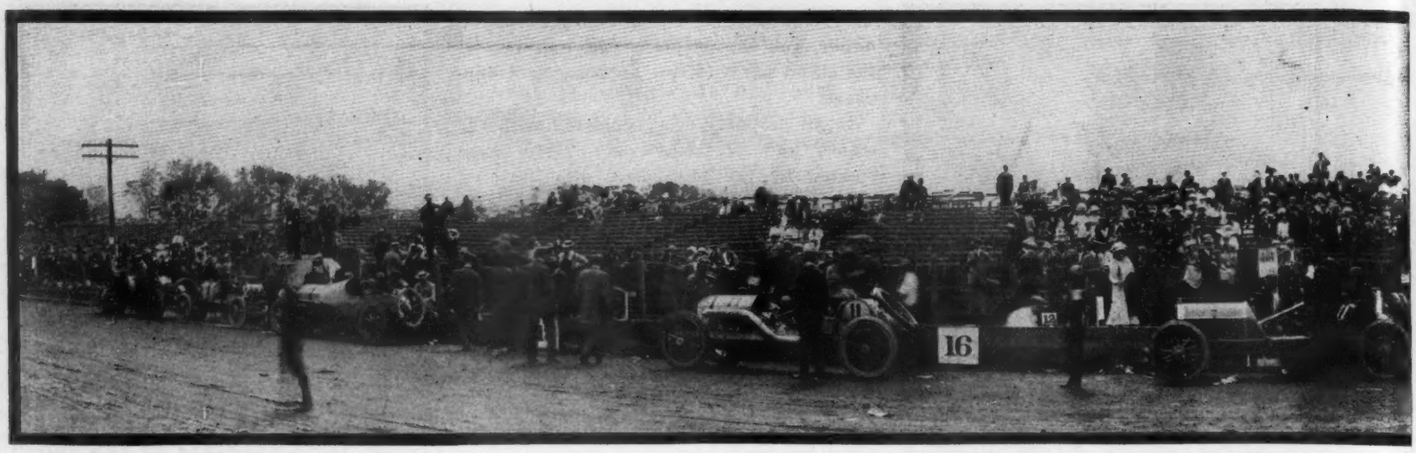
No official statement has as yet been given out as to the cause of the fall of the stand, but it is presumed that it was a case of too much haste in erecting the seats. The stand was a part of the big stadium used for Chicago's recent aviation meet and was used at Elgin last year. The aviation meet extending 1 day longer than had been scheduled because of the benefit given last Monday, the contractor was delayed in getting it to Elgin. In fact, he still had his men working on it when darkness came Thursday night and it was not until Saturday morning that he had put the awnings over the boxes. The Chicago Motor Club had nothing at all to do with the erection of the stands or the receipts therefrom, that coming under the jurisdiction of the Elgin Automobile Road Race Association.

Officials Stop Race

Adding to the confusion was the fact that the race had started, but the officials at once became masters of the situation. Referee Beecroft and Chairman Butler, of the A. A. A. contest board, at once ordered the race stopped and one by one the cars were flagged and lined up at the pit. It was ordered that they be held there until the officials could learn more about the accident. That this was a wise act was apparent to all, for if the race had continued there might have been more trouble, especially in trying to get the injured to the hospital. Only one lap had been run, so no one's chances had been injured. For the most part the drivers backed up the officials and Mulford and Wishart even went so far as to offer to help take the injured to the hospital. However, this was not necessary, the ambulance service being sufficient for the needs of the occasion.

It was nearly an hour later before the second start was made, Grant in No. 1 Alco getting his signal at 11:50. Nine others followed him, the two absentees being the Cinos, one of which was put out in practice on Thursday when a broken

TAKEN PRIOR TO FIRST START AND BEFORE ACCIDENT TO GRAND STAND OCCURRED



AT THE START THE FIRST DAY—CARS AT THE TAPE ARE ENTRANTS IN ILLINOIS AND KANE COUNTY

connecting rod punched a hole in the crankcase. This caused Raimey to take Burt's place in the other Cino in the Kane County on Friday, but his accident in that race so damaged the car that it was impossible for it to line up with the others in the big event. This left Grant, Lee and Hartman in the Alcos, de Palma and Wishart in Simplexes, Aitken and Zengel in Nationals, Mulford in the Lozier, Buck in the Pope-Hartford and Hughes in the Mercer.

Right from the jump Mulford assumed the aggressive and from the way he burned up the course it looked as if he would repeat his last year's performance. He immediately opened a gap on the others, traveling at 70 miles an hour. This he kept up for eight laps, or 68 miles, when a burnt-out bearing put a piston and connection rod out of commission and stopped the Lozier just at a time when its chances looked brightest. Mulford had one consolation, however—he pulled down the $200 cash prize given by the Stromberg Motor Devices Co. for the fastest lap. This came in the seventh, which he turned in 7:13, equal to 70.45 miles per hour. His running was most consistent, his laps being 7:27, 7:14, 7:19, 7:17, 7:18, 7:17, 7:13 and 7:17, an average of 69.78 miles per hour for the distance traveled.

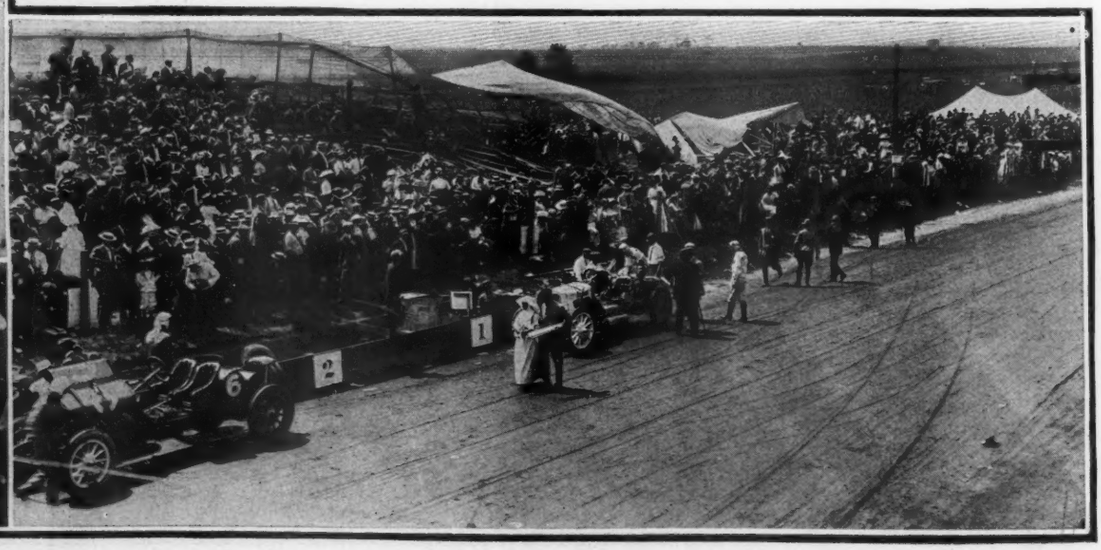
Stars Are Eliminated

Before this, however, there were others to fall by the way. On his third lap Aitken in the National went out with a cracked cylinder and the big blue car pulled up at the pit. In the same lap de Palma was put out with a broken flywheel. Close on the heels of these mishaps came trouble for Wishart in the other Simplex, a burnt out connecting rod bearing putting him out of the running when he was in second place. Then the race ran along to the twentieth lap before Hartman in the Alco was put out by a leaky gasoline line. At that time he was in fifth place.

All this time poor Buck was having tire troubles, much as did George Robertson a year ago in the Simplex. Even though the big Pope seemed to have plenty of speed, the continual stops for tires put it out of the running. It was while Buck was fighting to make up some of this lost ground and perhaps get in for a position at the finish that the accident occurred in the back stretch. It was in his twenty-fifth lap and the big car was running over a fine stretch of road. A right front tire went and the Pope turned over completely and come up on its wheels again. Both Buck and Mechanician Jacobs were hurled from the car. The mechanic was killed instantly but it was thought for a time that Buck's most serious injury was a broken thigh. He was taken to the hospital, where it developed that in addition his spine was broken, and at 5:50 the end came.

Zengel Drives Consistently

While all this was going on Zengel, Grant and Hughes were battling for the cup. Lee and Hartman in the other Alcos never were important factors, but it did look for a time as if Grant might overtake Zengel. The Fairmount park winner, however, was not to be denied. He kept everlastingly at it, never gave



SECTION OF THE GRAND STAND THAT COLLAPSED; 1—GRANT, ALCO, SECOND IN ELGIN NATIONAL; 2—ROBBINS, ABBOTT, THIRD IN AURORA; 3—KULICK, FORD, SECOND IN AURORA.

RACES—LINED UP AT PIT ARE THE THREE AURORA CUP CANDIDATES WHICH STARTED LATER

his rivals the least opening and from the time Mulford was eliminated to the end he always was in command. At the end of the twenty-first lap Zengel made his first stop, pulling up at the pit to take on gasoline. The next around Grant came in and put on gasoline and water. Then the two again went at it hammer and tongs and at the thirty-second lap both made stops at the pit. Zengel took on a small quantity of gasoline, having heard a rattle in the tank that led him to believe his fuel was running low. This was not so, however, and he picked up the running again immediately. Hughes in the Mercer never stopped at the pit, but did make one tire change along the course which did not take him long to accomplish.

The last lap was made interesting only by the fight for second place between Grant and Hughes. The Mercer went the last circuit 1 second faster than Grant, but that was not enough to land the place. Lee still was running and was in his thirty-third lap when Starter Wagner declared the race at an end.

The first day's racing was marked by the fact that all three winners—Herr, Hughes and Roberts—went through without a stop and also by the freedom from tire troubles, it being reported from the tire camps that only three cars suffered in this respect—two Stavers and Jenkins' Cole. The Stavers pinched tubes through not having racing rims, it is said. Not only did Herr go through without a falter, but Merz, his teammate, duplicated this feat. Merz was beaten 9 seconds for the cup and part of this loss is explained by his overrunning turns three times. Each time this meant a slight loss, of which Herr took advantage. Merz often came by the stand at a tremendous clip and he testified to the great speed of the course by stating that several times he had the speedometer needle up to 100 miles an hour coming down the grade from Britten's hill to the stand. In this race the Stromberg $100 cash prize for the fastest lap was won by Herr, whose second lap in 7:23 was the best.

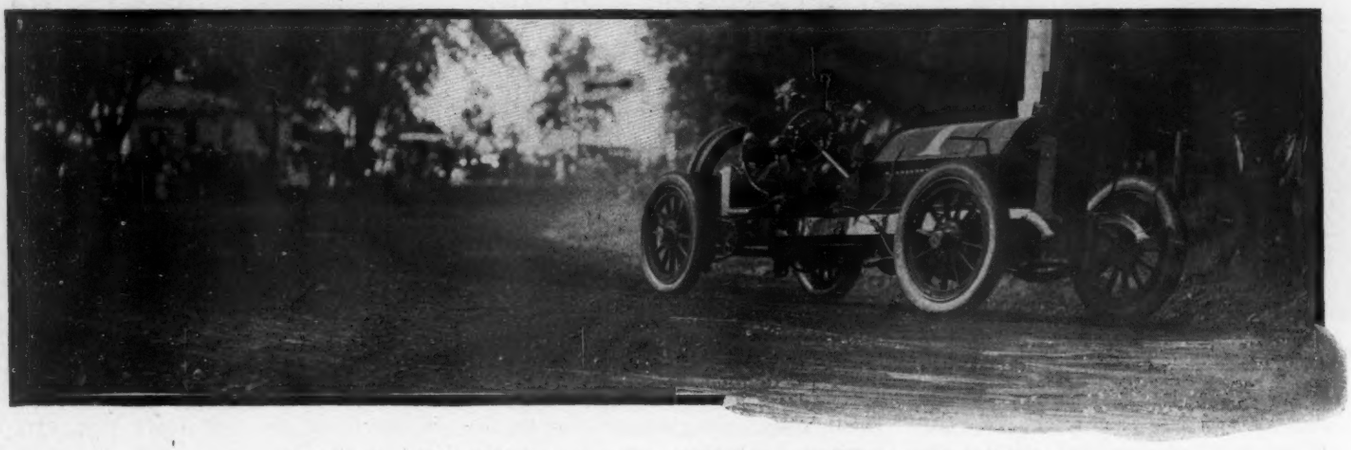
Kane County a Pretty Race

It was in the Kane County that the chief interest was shown, caused by the large field of starters. While Hughes was looked on as the favorite from the start, still it was thought he would have to fight to beat the Colbys, Coles and the others. The Staver people had hard luck in this. In the first place they were robbed of their best driver when Joe Nikrent, the Californian, was unable to start through having broken a bolt in his engine base. Then Robillard went out when he hit a telegraph pole. This left Monckmeier and that plucky youth kept plugging and was the last one to catch the flag.

Of the eleven that started in this race, seven finished. Robillard went out in the seventh, as explained. Ogren, a new man in one of the Colbys, was eliminated by having his pistons seize in the sixth lap; Armstrong, another Colbyite, was running in his fifteenth lap when the race ended. The fourth car was the Cino, which was put out in the seventh lap when Raimey's tire trouble in the backstretch caused the Cino to pitch them both out, injuring neither. Raimey was somewhat

VIEW OF HOMESTRETCH, SHOWING ZENGEL APPROACHING; 1—PERCE, COLBY, THIRD IN KANE COUNTY; 2—BARNES, MERCER, SECOND IN KANE COUNTY; 3—MERZ, NATIONAL, SECOND IN ILLINOIS

Story of the Four Races Told in Detail



GRANT IN ALCO, SECOND IN ELGIN NATIONAL, ROUNDING UDINA TURN

bruised and Mechanician Radina broke an ankle. Hughes' sixteenth lap in 7:41 won the Stromberg $100 prize.

Roberts in the Abbott-Detroit drove a pretty race for the Aurora cup, although in the early stages it looked as if A. M. Robbins, the Abbott dealer, who was driving his first race, would put it over on him. Robbins had gained the lead and was in front at the end of the third lap. In the backstretch a bolt in his magneto coupling broke and he lost 9 minutes fixing it. That lost him the lead. Again later on another bolt loosened and more time was lost. This was the only bit of trouble experienced by the three contestants throughout the race. None of them stopped for tires or for supplies. Kulick ran consistently, but never got close enough to Roberts to worry him. Roberts' fourth lap in 9:19 was the fastest and captured the Stromberg prize.

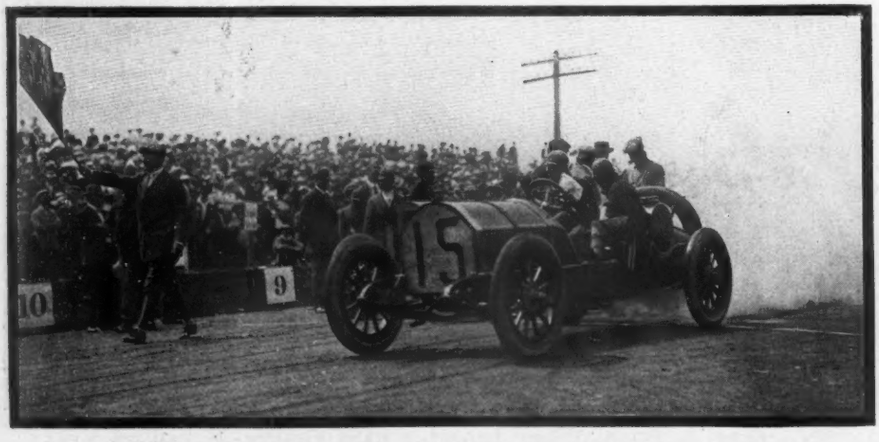
The time made in all four races was a revelation and the fact that three course records were broken is good pay for the Elginites, who spent $6,000 on the homestretch alone. In the big race Zengel averaged 66.45 miles per hour for the 305 miles, whereas last year Mulford did 62.5 for the same distance. It is more than likely that even this would have been beaten had Mulford stayed in Saturday, for while he was running he was going close to 70. Zengel's consistent work was in keeping with the schedule he had laid out and possibly he could have done better had he been pushed.

Speed of the Races

In the Illinois cup race Herr did 65.6 for the 203 miles, a big increase over last year's Illinois, in which Livingstone in a National averaged 60.6 miles an hour. In the Kane County Hughes averaged 63 miles an hour for the 169 miles, whereas last year Buck in the Marmon won at 55.1 miles per hour. Hearne in the Benz won the Fox River cup last year at 54.1 miles per hour, which was just a shade better than Roberts did Friday, the Abbott's average being 53.5 miles per hour.

The timing and checking were first class. The Warner instrument, of course, was used in the timers' stand and not once did it slip a cog. There were eleven bulletin boards around the course on which the time was posted and so perfect did L. R. Campbell have his system working the second day that 70 seconds after a car crossed the tape at the finish of a lap the time was on all the boards around the course. The score boards were something new and those in the grandstand had a fine opportunity to study the scheme evolved by H. N. Fowler, of the Chicago Motor Club. This big board was worked from behind. Under each car's number was a swinging board, pivoted in the center. The scorers placed the time on this board when it was turned to the rear by means of clips, the figures being already printed on cardboard. Then by swinging this little door it was turned to the front and the public could study the results easily.

DAVE BUCK, KILLED IN ACCIDENT

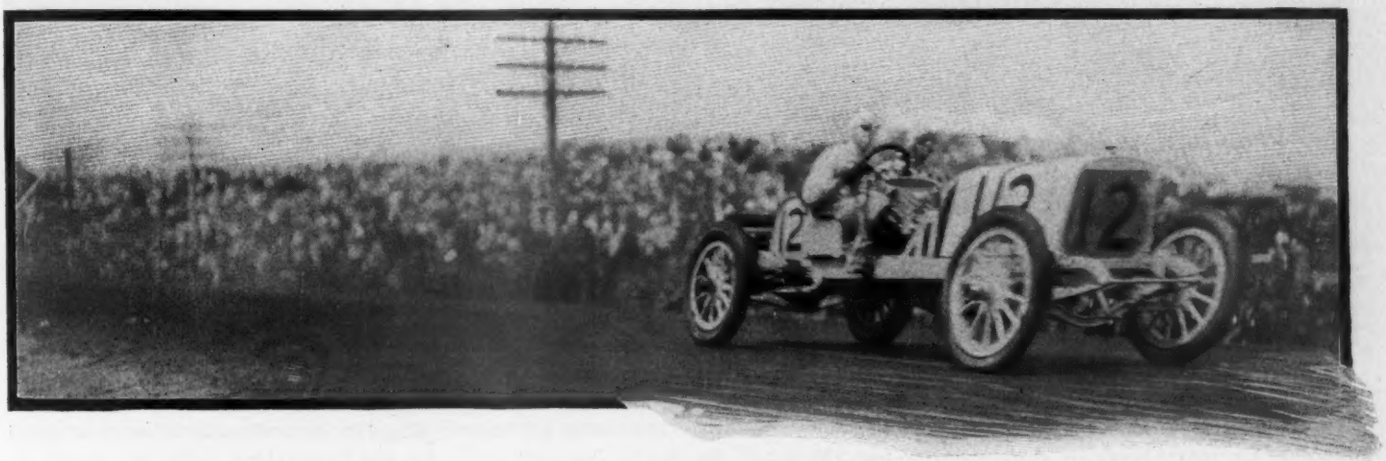


HUGH HUGHES IN MERCER, WINNER OF KANE COUNTY CUP

Handling of the Details

The transportation of the soldiers and flagmen was handled by John H. Kelly, who had at his command several big trucks loaned by Chicago dealers, and there never was a hitch there. J. S. Woodworth again handled the flagmen, all of whom were motor cyclists, and there was no complaint here, either. As for

Zengel's Victory in the Elgin National



RALPH MULFORD, LOZIER, WINNER OF STROMBERG PRIZE FOR FASTEST LAP IN ELGIN NATIONAL

SAMUEL JACOBS, KILLED IN ACCIDENT

the press stand, that was a commodious structure, two stories high. The Chicago newspapers had the first floor and each paper was allowed three representatives there. Upstairs were located the visiting newspaper men and the trade press.

Another innovation introduced by the Chicago Motor Club was a distinguished guests' stand in which were placed prominent car manufacturers and others whom the club desired to recognize. This stand was well filled both days and the makers appeared to appreciate the compliment.

A coroner's inquest was held Saturday night in Elgin and the jury returned a verdict holding no one responsible for the death of poor Dave Buck and his mechanic. Dave appears to have been a nickname given the Pope-Hartford driver because he so closely resembled his father, whose name was David. The driver's right name was Richard Dudley Buck and he was 36 years old, his birthplace being Buchanan, Mich.

WHEN the cars lined up for the start of the big race it was noticed that the Cinos had been scratched. This left ten cars in the field, as follows: Alco No. 1, driven by Grant; No. 2 National, Zengel; No. 3 Pope-Hartford, Buck; No. 4 Simplex, Wishart; No. 5 Alco, Lee; No. 6 National, Aitkin; No. 7 Alco, Hartman; No. 9 Mercer, Hughes; No. 11 Simplex, de Palma, and No. 12 Lozier, Mulford. The last named starting out with the evident determination of not alone winning the race but breaking all records as well, covered the initial circuit in 12 seconds less than his nearest rivals, National No. 2 and Simplex No. 4. De Palma's Simplex covered the round 14 seconds slower than did the leader, followed by Grant's Alco, Hartman's Alco, the Mercer, Lee's Alco, the Pope-Hartford and the Aitken National in the order named.

The second round saw Mulford add still more to his lead, the end of that circuit showing him to be 26 seconds in advance of Zengel, who had displaced Wishart in the Simplex as runner-up. De Palma still maintained fourth position, with the Grant Alco in fifth place 2 seconds behind, the remainder of the contestants trailing. The third round witnessed the elimination of two, Aitken's National going out with a cracked cylinder and de Palma's Simplex retiring to the side lines with a broken flywheel. At the conclusion of this round Mulford's advantage had been increased to 33 seconds over the Zengel National, which in turn had a lead of 9 seconds over the Wishart Simplex. Grant was in fourth place 14 seconds behind Wishart, with Mercer, the Hartman Alco, the Lee Alco, the Pope-Hartford following in the order named.

In the fourth lap the Wishart Simplex moved into second place 58 seconds behind the flying Mulford, Zengel dropping back to third place and Grant retaining fourth place, the other quartet retaining their respective positions. The fifth circuit saw the Wishart Simplex, which had been making a strong bid, bowled out, the trouble being a burnt-out connecting rod bearing. As a result of the Simplex's withdrawal, Zengel once more swung into second place 1 minute 18 sec

FRANK LEE, ALCO, RUNNING WHEN BIG RACE ENDED

LOOKING EAST FROM THE START AND SHOWING HOW CROWDS LINED THE FENCES

onds behind Mulford, who still was continuing his record-breaking performance, as laps in 7:14, 7:19 and 7:18 indicate.

Grant in Alco No. 1 moved up in third place 20 seconds behind Zengel, with Hughes in the Mercer following 40 seconds behind and the Hartman Alco 13 seconds behind Hughes. The sixth, seventh and eighth rounds brought no change in the relative position of the seven remaining contenders, although at the conclusion of the latter circuit Mulford had so consistently added to his advantage that he was now but 2 seconds short of being a full 2 minutes ahead of his nearest rival, Zengel in a National. The latter was 61 seconds ahead of the Grant Alco, which in turn had almost 4 minutes advantage over the Mercer. The Hartman Alco was about 1½ minutes behind behind the Mercer, with the Lee Alco and the Pope-Hartford far behind, and, barring accidents to the leaders, out of the race.

Lozier Has Trouble

The Lozier's remarkable work in the first eight rounds exemplified the old adage that the race is not always to the swift, for the big white car limped into the hospital just short of its ninth round and the announcement was megaphoned that the car was permanently out of the race with a burnt-out connecting rod bearing. This put the Zengel National into the lead by a margin of 1 minute 16 seconds over the Grant Alco, and the huge crowd of spectators deprived of the hope of a second win for Mulford, settled back comfortably in the belief that there would be furnished a heart-breaking contest between the two leaders. At this point the Mercer was trailing along in third place but 42 seconds behind the Grant Alco, followed in turn by the Hartman Alco, which was 23 seconds in the rear, followed by the Lee Alco and the Pope-Hartford, the latter being ½ hour behind.

From the tenth to the sixteenth laps there was little to vary the monotony of the grind with the exception that Alco No. 7, which had been trailing along in fourth place, moved up to third in the twelfth round and maintained its position during four circuits. The sixteenth round saw the Mercer, which had been held up at the pits on two occasions for refilling and tire changes, regain third place, but nearly 4 minutes behind the Grant Alco, which was second, a trifle over 2 minutes behind the leader. The seventeenth, eighteenth, ninteenth and twentieth rounds saw no change in the position of the six contenders, the conclusion of the last named circuit showing Zengel to be 2 minutes 12 seconds ahead of the Grant Alco, with the Mercer in third place, over 4 minutes behind, and the Hartman Alco a bad fourth, having been delayed by a leak in the gasoline line, which compelled the withdrawal of the car in the next round. The Lee Alco was plugging along in fifth place and Buck in the Pope-Hartford was plodding along doggedly many miles behind.

Zengel's First Stop

On the twenty-first lap the Zengel National made its first stop, having gone over 177 miles without a let-up. The stop, however, was a short one, and after filling with gasoline, Zengel was away amid the cheers of the huge crowd, but with a loss of a full minute to the fast flying Grant, the margin now separating the two cars being but 1 minute 21 seconds. The Mercer was now over 4 minutes behind the Grant Alco, but still in third place, and the crowd began to hope for the National-Alco duel which the enforced withdrawal of Mulford's Lozier had seemed to portend. The twenty-second lap, however, saw Grant loose all the advantage he had gained by Zengel's stop, with another minute added to the handicap that he would be compelled to overcome in order to catch the leader. Grant's stop was for gasoline and water,

RESULTS IN ELGIN NATIONAL TROPHY RACE, FOR CARS UNDER 600 INCHES, WON BY

No.	Car	Driver	Entrant	Bore, Inches	Stroke, Inches	Time	1 8 Miles 2499 Ft.	2 16 Miles 4998 Ft.	3 25 Miles 2217 Ft.	4 33 Miles 4716 Ft.	5 42 Miles 1935 Ft.	6 50 Miles 4434 Ft.	7 59 Miles 1653 Ft.	8 67 Miles 4152 Ft.	9 76 Miles 1371 Ft.	10 84 Miles 3870 Ft.	11 93 Miles 1089 Ft.	12 101 Miles 3588 Ft.
2	National	Zengel	National Motor Vehicle Co	5	5½	Elapsed	.....	15:07	22:33	30:27	37:53	45:17	52:48	60:20	67:50	75:16	82:46	90:24
						Lap	7:39	7:28	7:26	7:54	7:26	7:24	7:31	7:32	7:30	7:26	7:30	7:38
1	Alco	Grant	American Locomotive Co	4.727	5½	Elapsed	.....	15:23	22:58	30:35	38:13	45:52	53:35	61:21	69:06	76:50	84:25	92:60
						Lap	7:43	7:40	7:35	7:37	7:38	7:39	7:43	7:46	7:45	7:44	7:35	7:35
9	Mercer	Hughes	Mercer Automobile Co	4¾	5	Elapsed	.....	15:44	23:27	31:09	38:53	46:35	54:18	62:00	69:52	77:40	85:29	94:52
						Lap	7:58	7:46	7:43	7:42	7:44	7:42	7:43	7:42	7:52	7:48	7:49	9:23
5	Alco	Lee	American Locomotive Co	4.727	5½	Elapsed	.....	18:46	26:44	34:40	42:37	50:53	58:53	68:31	76:27	84:25	93:13	109:34
						Lap	8:12	10:34	7:58	7:56	7:57	8:16	8:01	9:38	7:56	7:58	8:48	16:21
3	Pope-Hartford	Buck	J. L. Russell	4¾	5½	Elapsed	.....	25:53	38:08	56:20	74:29	83:22	91:08	99:19	110:22	118:26	126:15	139:10
						Lap	8:58	16:45	12:15	18:12	18:09	8:53	7:46	8:11	11:03	8:04	7:49	7:55
7	Alco	Hartman	American Locomotive Co	4.725	5½	Elapsed	.....	15:41	23:29	31:16	39:06	46:53	54:40	62:26	70:15	78:01	85:48	93:35
						Lap	7:56	7:45	7:48	7:47	7:50	7:47	7:47	7:46	7:49	7:46	7:47	7:47
12	Lozier	Mulford	Lozier Motor Co	5⅛	6	Elapsed	.....	14:41	22:00	29:17	36:35	43:52	51:05	58:22	} Out	Burntou	t Connec	ting, Rod
						Lap	7:27	7:14	7:19	7:17	7:18	7:17	7:13	7:17	} Be	aring		
4	Simplex	Wishart	Simplex Automobile Co	5.775	5¼	Elapsed	.....	15:11	22:42	30:15	}							
						Lap	7:39	7:32	7:31	7:33	} Out	Broken	Conne	cting	Rod			
11	Simplex	De Palma	Simplex Automobile Co	5.775	5¼	Elapsed	.....	15:21	}									
						Lap	7:41	7:40	} Out	Flywh	eel bro	ken						
6	National	Aitken	National Motor Vehicle Co	5	5½	Elapsed	.....	20:23	}									
						Lap	11:38	8:45	} Out	Cracke	d Cyli	nder						

BRITTEN'S HILL, DOWN WHICH BIG CARS RAN AT 100 MILES AN HOUR

TABLE SHOWING THE LAP POSITIONS OF CONTESTANTS IN ELGIN NATIONAL

No.	Car	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Lap 6	Lap 7	Lap 8	Lap 9	Lap 10	Lap 11	Lap 12	Lap 13	Lap 14	Lap 15	Lap 16	Lap 17	Lap 18	Lap 19	Lap 10	Lap 21	Lap 22	Lap 23	Lap 24	Lap 25	Lap 26	Lap 27	Lap 28	Lap 29	Lap 30	Lap 31	Lap 32	Lap 33	Lap 34	Lap 35	Lap 36
2	National	3	2	2	4	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	Alco	5	5	4	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	Mercer	7	7	5	5	4	4	4	4	3	3	3	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5	Alco	8	8	7	7	6	6	6	6	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	Pope-Hartford	9	10	8	8	7	7	7	7	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5												
7	Alco	6	6	6	6	5	5	5	5	4	4	4	3	3	3	3	4	4	4	4	4																
12	Lozier	1	1	1	1	1	1	1	1																												
4	Simplex	2	3																																		
11	Simplex	4	4																																		
6	National	10	9																																		

the filling of the latter being rendered somewhat slow owing to the high pressure in the radiator, the force of the steam blowing the water aside and preventing rapid filling. This really was the deciding point in the race for first place, for with neither of the fast-flying leaders stopping on account of tire trouble, Zengel's lead was sufficient to enable him to play it safe to the end of the race, although he did consistently outdrive Grant in all but the very last lap, when, with the prize practically in his grasp, he drove one of the slowest laps of the entire thirty-six, barring, of course, those in which he was compelled to stop for supplies. These were in the twenty-first lap, as above mentioned, and again in the thirty-second lap, on both of which occasions the men at the pit performed their work in jig time. Grant's second stop—for gasoline and water—also in the thirty-second round, gave a comparison of the working of the two pit crews. The National outfit showing ginger that cast the efforts of the Alco contingent into the shade, although the fact that the Alco had to take water in addition to the gasoline really caused the delay.

Hughes Pushes Grant

The first position settled, barring accidents, the race for second place between the Grant Alco and Mercer No. 9 now attracted the attention of the spectators. When Grant made his long stop in the thirty-second round Hughes saw his opportunity and at the close of that lap he had almost closed the gap which separated his car from second place, Grant's margin of lead being but 24 seconds. This was still further reduced in the thirty-third round to 16 seconds, increased to 17 in the thirty-fourth lap and reduced to 12 seconds at the conclusion of the thirty-fifth circuit, the next to the last of the race. The sympathies of the crowd seemed to be with Hughes in the Mercer, his brilliant victory of the preceding day having made him a general favorite. The Alco, with its excess of power, was enabled, however, to hold the Mercer safe and, although the latter covered the last lap a second faster than his rival, it was unable to close the gap, a matter of but about 11 seconds separating the two cars at the finish. Alco No. 5, which had met with a variety of troubles throughout the race, was running at its conclusion, having covered thirty-two of the thirty-six laps—about 272 miles.

LEN ZENGEL IN NATIONAL, WHO AVERAGED 66.45 MILES PER HOUR FOR 305 MILES

13 110 Miles 807 Ft.	14 118 Miles 3306 Ft.	15 127 Miles 525 Ft.	16 135 Miles 3024 Ft.	17 144 Miles 243 Ft.	18 152 Miles 2742 Ft.	19 160 Miles 5241 Ft.	20 169 Miles 2460 Ft.	21 177 Miles 4959 Ft.	22 186 Miles 2178 Ft.	23 194 Miles 4677 Ft.	24 203 Miles 1896 Ft.	25 211 Miles 4395 Ft.	26 220 Miles 1614 Ft.	27 228 Miles 4113 Ft.	28 237 Miles 1332 Ft.	29 245 Miles 3831 Ft.	30 254 Miles 1050 Ft.	31 262 Miles 3549 Ft.	32 271 Miles 768 Ft.	33 279 Miles 3257 Ft.	34 288 Miles 486 Ft.	35 296 Miles 2985 Ft.	36 305 Miles 204 Ft.	Position at Finish	Miles per Hour Average
97:57	105:29	113:07	120:42	128:21	135:57	143:31	151:02	159:30	167:13	174:44	182:17	189:55	197:31	205:09	212:50	220:29	228:12	235:49	244:16	252:08	259:54	267:44	275:39.08		
7:33	7:32	7:38	7:35	7:39	7:36	7:34	7:31	8:28	7:43	7:31	7:33	7:38	7:36	7:38	7:41	7:39	7:43	7:37	8:27	7:52	7:46	7:50	7:55	First	66.45
99:35	107:18	115:02	122:15	130:21	138:09	145:38	153:14	160:51	170:44	178:25	186:15	193:55	201:39	209:24	217:10	224:52	232:37	240:25	250:42	258:33	266:24	274:14	281:58.72		
7:35	7:43	7:44	7:43	7:46	7:38	7:29	7:36	7:37	9:53	7:41	7:50	7:40	7:44	7:45	7:46	7:47	7:45	7:48	10:17	7:51	7:51	7:50	7:44.72	Second	64.90
102:39	110:28	118:16	126:25	134:09	141:54	149:40	157:27	165:16	173:03	182:01	189:46	197:34	205:14	212:55	220:32	228:09	235:43	243:30	251:07	258:49	266:41	274:26	282:09.97		
7:47	7:49	7:48	8:09	7:44	7:45	7:46	7:47	7:49	7:47	8:58	7:45	7:48	7:40	7:41	7:37	7:37	7:34	7:47	7:37	7:42	7:52	7:45	7:43.97	Third	64.54
119:06	127:00	134:47	142:34	150:21	158:09	170:14	178:14	186:28	194:28	205:14	213:09	225:38	233·34	241:19	249:22	257:18	265:24	273:41	285:45						
9:32	7:54	7:47	7:47	7:47	7:48	12:05	8:00	8:14	8:00	10:46	7:55	12:29	7:56	7:45	8:03	7:56	8:06	8:17	12:04	Still	Running				
147:36	156:33	164:31	172:93	183:31	191:19	199:07	206:58	214:49	222:42	233:33	238:36														
13:26	8:57	7:58	8:12	10:48	7:48	7:48	7:51	7:51	7:53	7:51	7:53	Out	— Tur	ned ov	er										
101:23	109:12	117:11	128:42	136:34	144:24	153:51	165:44																		
7:48	7:49	7:59	11:31	7:52	7:50	9:27	11:53	Out	— Bro	ken Fu	elConn	ections													

Herr in National Wins the Illinois Cup

OFFICIAL RESULTS IN ILLINOIS CUP RACE FOR 301-450 CLASS CARS WHICH WAS WON

No.	Car	Driver	Entrant	Bore, Inches	Stroke, Inches	Time	1 8 Miles 2499 Ft.	2 16 Miles 4998 Ft.	3 25 Miles 2217 Ft.	4 33 Miles 4716 Ft.	5 42 Miles 1935 Ft.	6 50 Miles 4434 Ft.
1	National	Donald Herr	National Motor Vehicle Co	5	5½	Elapsed	.....	15:00	22:41	30:40	38:25	46:08
						Lap	7:37	7:23	7:41	7:54	7:45	7:43
3	National	Charles Merz	National Motor Vehicle Co	5	5½	Elapsed	.....	15:28	23:03	30:39	38:18	46:03
						Lap	7:46	7:42	7:35	7:36	7:39	7:45
2	Velie	Rupert Jeffkins	Velie Motor Car Co	4½	5½	Elapsed	.....	21:40	31:18	40:27	49:32	58:33
						Lap	9:14	12:26	9:38	9:09	9:05	9:01
4	Velie	J. H. Stickney	Velie Motor Car Co	4½	5½	Elapsed	.....	16:27	30:08	61:56	70:12	78:33
						Lap	8:26	8:01	13:41	31:48	8:16	8:21

TWO Nationals and a pair of Velies were the only contestants in the Illinois trophy race at 203 miles. The first time around the Herr National had gained 9 seconds upon his teammate, followed by Velie No. 4 with the Jeffkins Velie well up in the rear. At the end of the second round the Herr National with one of the fastest laps of the race swung into the lead, Merz falling into second place, the Stickney Velie and its mate following in the order named. This order was maintained throughout the third lap, at the conclusion of which Herr was leading his mate by 22 seconds, with the Velie pair far behind.

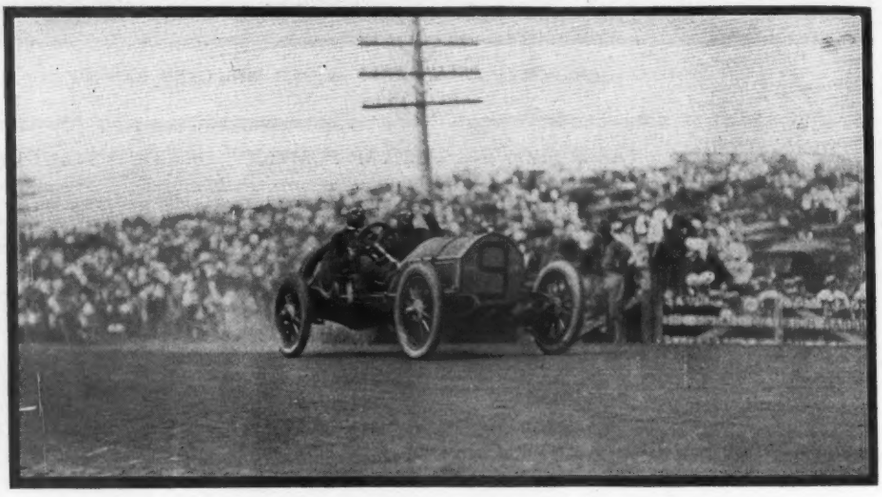
The conclusion of the fourth round saw Merz leading by the smallest possible margin, with the others maintaining their respective positions. This order was maintained throughout the fifth, sixth, seventh and eighth rounds. The end of the last-named circuit found the Merz National leading by the meager margin of 7 seconds. This lead was overcome in the following round by Herr, who led at the conclusion of the ninth round with a margin of 12 seconds over the Merz National with the Velie pair still falling back.

Race Between the Nationals

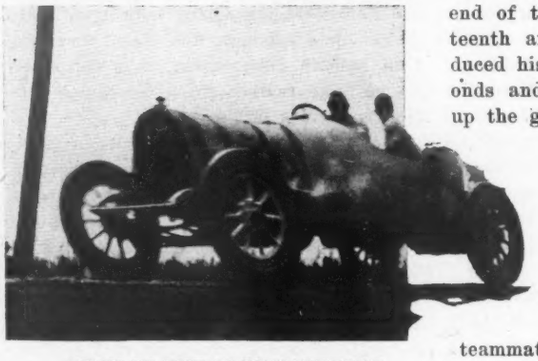
From this point on the race developed into a duel between the National pair for the honors, Herr in the tenth round increasing his lead to 42 seconds, increasing it to 53 seconds at the conclusion of the eleventh lap and to 63 seconds at the end of the twelfth round. In the thirteenth and fourteenth circuits Merz reduced his teammate's lead by a few seconds and was slowly but surely closing up the gap that separated him from the leader. The conclusion of the fifteenth round saw the Herr National leading by but a scant 20 seconds which was still further reduced at the end of the sixteenth lap to 15 seconds. The Herr National gained slightly on its teammate in the seventeenth, eighteenth and nineteenth rounds, but lost a trifle on the twentieth, Herr's lead at the conclusion of that lap being an even 25 seconds. Rounds 21 and 22 found Herr hanging on to his meagre lead with bulldog tenacity.

At this point Merz began a determined effort to overtake his mate, gaining 8 seconds on the next to the last round. When the times of the contending pair had been taken at this point it was seen that the Herr National had a lead of but 27 seconds and Merz went out to cut that down if possible. Herr was equally insistent on maintaining his advantage and although Merz steadily but none the less surely gained ground, he was unable to overcome the lead of his opponent.

Although the Velie pair were still running at the conclusion of the race, No. 2 had completed but twenty laps and No. 4 but sixteen.



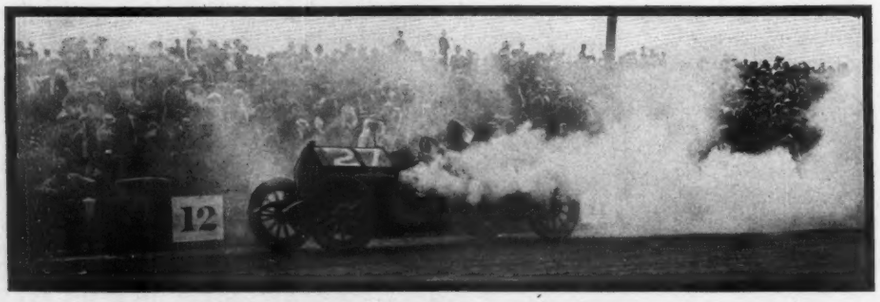
HUGHES, MERCER, THIRD IN THE ELGIN NATIONAL



BUCK IN THE POPE-HARTFORD

TABLE SHOWING LAP POSITIONS IN THE ILLINOIS CUP RACE

No.	Car	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Lap 6	Lap 7	Lap 8	Lap 9	Lap 10	Lap 11	Lap 12	Lap 13	Lap 14	Lap 15	Lap 16	Lap 17	Lap 18	Lap 19	Lap 20	Lap 21	Lap 22	Lap 23	Lap 24
1	National	2	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	National	1	2	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	Velie	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3				
4	Velie	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4								



MONCKMEIER, STAVER, FINISHER IN KANE COUNTY RACE

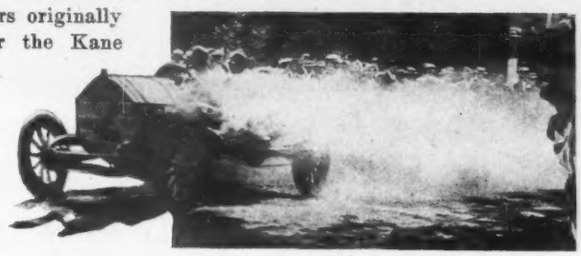
Hughes in Mercer Takes Kane County

BY DONALD HERR IN A NATIONAL WHO AVERAGED 65.63 MILES AN HOUR FOR 203 MILES

7 50 Miles 1653 Ft.	8 67 Miles 4152 Ft.	9 76 Miles 1371 Ft.	10 84 Miles 3870 Ft.	11 93 Miles 1089 Ft.	12 101 Miles 3588 Ft.	13 110 Miles 807 Ft.	14 118 Miles 3306 Ft.	15 127 Miles 525 Ft.	16 135 Miles 3024 Ft.	17 144 Miles 243 Ft.	18 152 Miles 5241 Ft.	19 160 Miles 2460 Ft.	20 169 Miles 4959 Ft.	21 177 Miles 2178 Ft.	22 186 Miles 4677 Ft.	23 194 Miles Ft.	24 203 Miles 1896 Ft.	Position at Finish	Miles per Hour, Average
53:47	61:23	69:09	77:09	85:11	92:58	100:43	108:31	116:16	124:01	131:42	139:22	147:03	154:45	162:26	170:05	177:55	185:55	First	65.63
7:39	7:36	7:46	8:00	8:02	7:47	7:45	7:48	7:45	7:45	7:41	7:40	7:41	7:42	7:41	7:39	7:50	8:00		
53:37	61:16	69:21	77:51	86:04	94:01	101:37	109:08	116:36	124:16	132:05	139:56	147:39	155:10	162:53	170:40	178:22	186:04	Second	65.57
7:34	7:39	8:05	8:30	8:13	7:51	7:36	7:31	7:28	7:40	7:49	7:51	7:43	7:41	7:43	7:47	7:42	7:42		
67:39	76:53	85:56	95:07	106:51	116:02	124:54	133:51	142:39	151:30	160:27	169:20	178:10	186:59	Still Running					
19:06	9:14	9:03	9:11	11:44	9:11	8:52	8:57	8:48	8:51	8:57	8:53	8:50	8:49						
86:41	94:49	103:02	111:09	119:32	138:01	146:25	154:28	162:46	170:51	159:16	Still Running								
8:04	8:08	8:13	8:07	8:23	18:36	8:17	8:03	8:18	8:05	8:15									

BARNES, MERCER, SECOND IN KANE COUNTY

ELEVEN of the sixteen cars originally entered in the race for the Kane County cup faced the starter, the three Falcars having been withdrawn and the Staver-Chicago No. 16 and Cino No. 26 having been prevented from starting by accidents in practice. Mercer No. 15, driver by Hughie Hughes, jumped to the front at once, gaining a substantial lead in the first lap over Cole No. 24, driven by E. Jenkins, who led Corbin No. 14 by a scant second with Cino No. 11 close up and the Barnes-Mercer trailing along behind the Cino.



JEFFKINS, VELIE, IN ILLINOIS CUP

At the end of the second lap, however, Hughes' teammate swung into second position, being but 23 seconds behind the leader, the Corbin still maintaining third position, Staver-Chicago No. 27 moving up to fourth, Colby No. 20 into fifth and Cole No. 24 dropping back into the sixth notch. These relative positions of the contestants were maintained until the conclusion of the ninth round, Colby No. 18 having meanwhile dropped out in the sixth lap with a seized piston, Fred Robilliard in Staver-Chicago No. 25 coming to grief on the following lap when his car cut down a telegraph pole on the Hornbeck turn as a result of a tire coming loose, and Raimey in a Cinco also being eliminated when his car skidded on the backstretch, breaking his mechanician's leg.

The conclusion of the tenth circuit found the Mercer Hughes leading its teammate by 2 minutes 2 seconds, Colby, No. 20, being over 2 minutes behind the Barnes Mercer and Cole No. 24 about a minute behind Colby No. 20. For round after round the Mercer pair added to their lead over the other contestants, Hughes maintaining an advantage of about 2 minutes over its teammate throughout. From the sixteenth lap on to the finish Hughes added steadily to his lead and the conclusion of the race showed him to have an advantage of 2 minutes 34 seconds over Barnes, who in turn was 6 minutes 16 seconds ahead of Colby No. 20, which led the Cole No. 24 2 minutes 8 seconds. Corbin No. 14, Cole No. 21, Staver-Chicago No. 27 all completed the twenty laps, the last named being about 20 minutes behind the leader. Colby No. 22 was still running at the conclusion of the race, but was nearly six laps behind.

The performance of the leaders was remarkable for the almost entire absence of trouble of any kind, neither of the Mercer pair having been compelled to stop either at the pits or on the course for any reason.

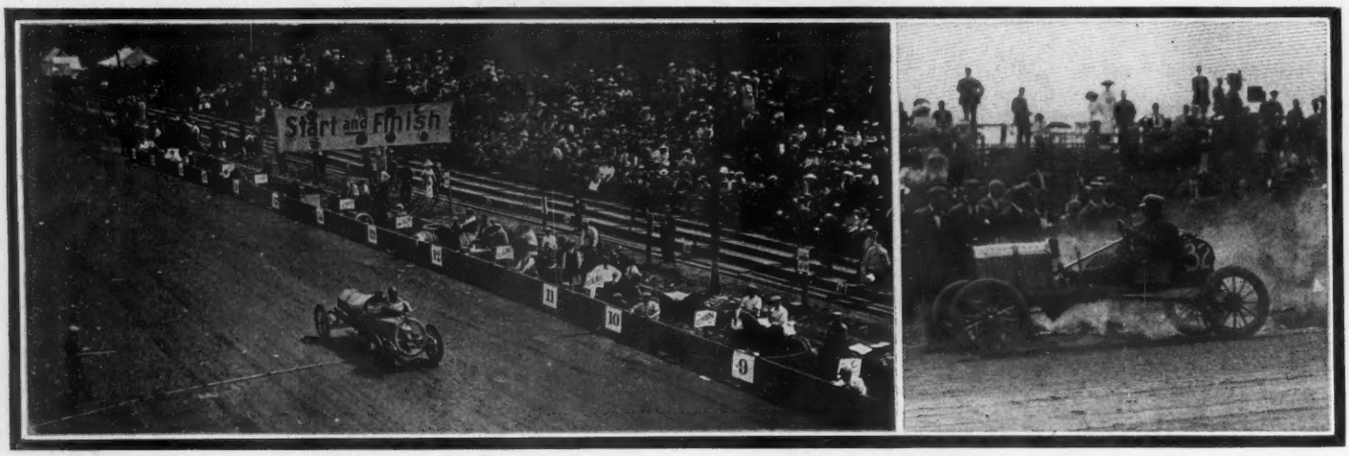
TABLE SHOWING LAP POSITIONS IN KANE COUNTY RACE

No.	Car	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Lap 6	Lap 7	Lap 8	Lap 9	Lap 10	Lap 11	Lap 12	Lap 13	Lap 14	Lap 15	Lap 16	Lap 17	Lap 18	Lap 19	Lap 20
15	Mercer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Mercer	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	Colby	7	5	5	5	5	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3
24	Cole	2	6	6	6	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4
14	Corbin	3	3	3	3	3	3	3	3	3	5	7	7	7	7	7	6	5	5	5	5
21	Cole	8	8	7	7	7	6	6	6	6	6	5	5	5	5	5	5	6	6	6	6
27	Staver-Chicago	6	4	4	4	4	8	7	7	7	7	6	6	6	6	6	7	7	7	7	7
22	Colby	9	9	11	11	11	10	8	8	8	8	8	8	8	8	8	8	8	8	8	8
11	Cino	4	7	8	8	8	7														
25	Staver-Chicago	10	10	9	9	9	9														
18	Colby	11	11	10	10	10															

DePALMA, SIMPLEX, AND MULFORD, LOZIER, READY TO START

OFFICIAL TABLE SHOWING RESULTS IN KANE COUNTY CUP RACE, FOR 231-300 CLASS CARS,

No.	Car	Driver	Entrant	Bore, Inches	Stroke, Inches	Time	1 8 Miles 2499 Ft.	2 16 Miles 4998 Ft.
15	Mercer	Hugh Hughes	Mercer Automobile Co	4½	5	Elapsed	11:20	15:55
						Lap	7:50	8:05
12	Mercer	W. F. Barnes, Jr	Mercer Automobile Co.	4½	5	Elapsed	10:42	16:18
						Lap	8:12	8:06
20	Colby	W. H. Pearce	Colby Motor Car Co	4¼	5¼	Elapsed	13:35	16:59
						Lap	8:35	8:25
24	Cole	John Jenkins	Cole Motor Car Co	4¼	4½	Elapsed	15:10	17:02
						Lap	8:40	8:22
14	Corbin	A. Maisonville	Corbin Motor Vehicle Corporation	4½	4¼	Elapsed	11:15	16:24
						Lap	8:15	8:09
21	Cole	G. Morris	Cole Motor Car Co	4½	4½	Elapsed	14:17	21:58
						Lap	8:47	13:11
27	Staver-Chicago	G. Monckmeier	Staver Carriage Co.	4½	5	Elapsed	16:29	16:40
						Lap	8:29	8:11
22	Colby	M. Armstrong	Colby Motor Car Co	4¼	5¼	Elapsed	17:53	22:42
						Lap	11:53	10:49
11	Cino	John Raimey	Haberer & Co	4½	5	Elapsed	10:57	17:36
						Lap	8:57	8:39
25	Staver-Chicago	Fred Robillard	Staver Carriage Co.	4½	5	Elapsed	21:02	22:58
						Lap	14:02	8:56
18	Colby	H. W. Ogren	Colby Motor Car Co	4¼	5¼	Elapsed	20:11	24:56
						Lap	15:41	9:15



ROBERTS IN ABBOTT, WINNING AURORA CUP— KULICK IN FORD, FINISHING

Roberts in an Abbott

STARTER WAGNER AND GRANT

THERE were but three entries in the race for the Aurora cup, Ford No. 32, driven by Kulick, being opposed by a pair of Abbott-Detroits, No. 33 driven by Mortimer Roberts and No. 31 by A. M. Robbins. At the end of the first round Roberts, who had started 30 seconds behind his teammate, had almost overtaken him, crossing the tape the first time around but 4 seconds behind and overcoming the 15-minute start of the Ford on the back stretch. The second round saw Roberts with a clear lead of 35 seconds over Robbins, with the Ford almost a minute behind. On the third round Robbins swung into the lead, having an advantage of 17 seconds at the close of the lap. Roberts, however, soon regained the lead owing to the combination of a fast lap and magneto trouble experienced by his rival on the back stretch. A repetition of the same trouble on the fifth lap caused Robbins to lose still more ground, his place as runner-up having been assumed by the Ford at the conclusion of the fourth round, from which point the order was Abbott-Detroit 31, Ford 32 and Abbott-Detroit 33 to the conclusion of the race.

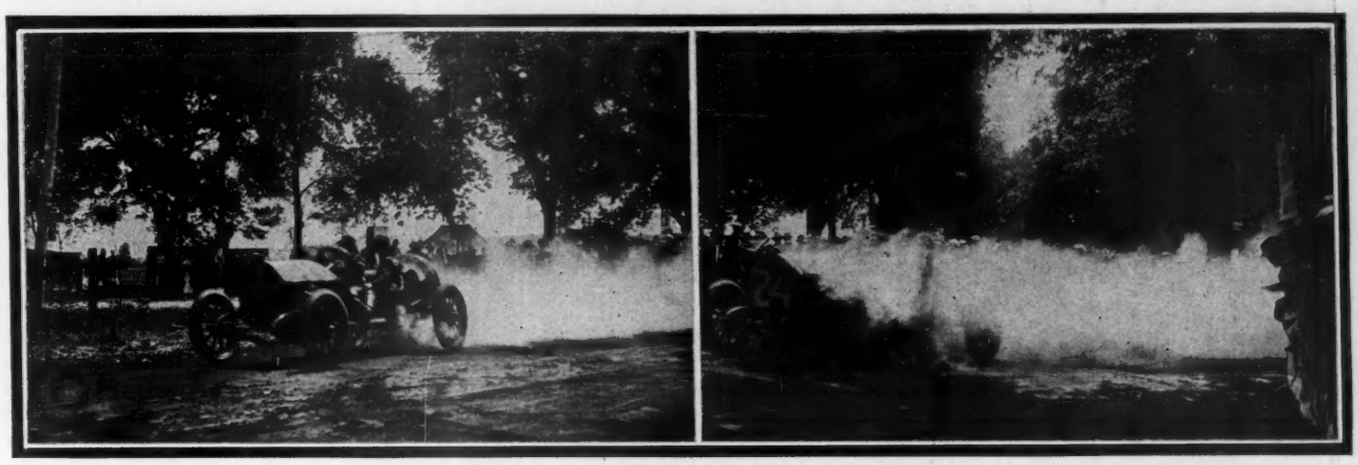
With each succeeding lap Roberts added about ½ minute to his lead over the Ford and at the close of the race had a lead of 8 minutes over Kulick's car. At the end of the fifth lap the Ford had an advan-

RESULTS IN AURORA CUP RACE, FOR 161-230CLASS CARS, WON

No.	Car	Driver	Entrant	Bore, Inches	Stroke, Inches	Time	1 8 Miles 2499 Ft.	2 16 Miles 4998 Ft.	3 25 Miles 2217 Ft.	4 33 Miles 4716 Ft.	5 42 Miles 1935 Ft
33	Abbott-Detroit	M. Roberts	M. Roberts	4	4½	Elapsed	.....	18:23	28:32	37:32	48:42
						Lap	9:13	9:10	10:09	9:00	9:10
32	Ford	F. Kulick	Ford Motor Co.	3.755	4	Elapsed	.....	19:53	29:38	39:31	49:27
						Lap	10:02	9:51	9:45	9:53	9:56
31	Abbott-Detroit	A. M. Robbins	A. M. Robbins	4	4½	Elapsed	.....	18:58	28:15	47:26	60:04
						Lap	9:37	9:19	9:17	19:11	12:38

WON BY HUGHES IN THE MERCER AT AN AVERAGE OF 64.61 MILES PER HOUR FOR 169 MILES

3 25 Miles 2217 Ft.	4 33 Miles 4716 Ft.	5 42 Miles 1935 Ft.	6 50 Miles 4434 Ft.	7 59 Miles 1653 Ft.	8 67 Miles 4152 Ft.	9 76 Miles 1371 Ft.	10 84 Miles 3870 Ft.	11 93 Miles 1089 Ft.	12 101 Miles 3588 Ft.	13 110 Miles 807 Ft.	14 118 Miles 3306 Ft.	15 127 Miles 525 Ft.	16 135 Miles 3024 Ft.	17 144 Miles 243 Ft.	18 152 Miles 2742 Ft.	19 160 Miles 5241 Ft.	20 169 Miles 2460 Ft.	Position at Finish	Miles per Hour, Average
23:42	31:28	39:14	47:03	54:55	62:49	70:51	78:49	86:52	94:45	102:46	110:46	118:36	126:17	134:00	141:46	149:37	157:21:52	First	64.61
4:47	7:46	7:46	7:49	7:52	7:54	8:02	7:58	8:03	7:53	8:01	8:00	7:50	7:41	7:43	7:46	7:51	7:44		
24:24	32:33	40:38	48:41	56:36	64:41	72:50	80:51	88:55	96:46	104:44	112:42	120:33	128:30	136:23	144:15	152:04	159:55:47	Second	63.56
8:09	8:09	8:05	8:03	7:55	8:05	8:09	8:01	8:04	7:51	7:58	7:58	7:51	7:57	7:53	7:52	7:49	7:51		
25:24	33:48	42:06	50:19	58:33	66:57	75:11	83:29	91:42	99:56	108:12	116:37	124:58	133:15	141:46	149:58	158:05	166:11.70	Third	
9:05	8:24	8:18	8:13	8:14	8:24	8:14	8:18	8:13	8:14	8:16	8:25	8:21	8:17	8:31	8:12	8:07	8:06		
25:27	33:52	42:16	50:37	59:04	67:32	76:00	84:33	93:00	101:24	109:47	118:09	126:28	134:47	143:05	151:27	159:50	168:19.30	Fourth	
8:25	8:25	8:24	8:21	8:27	8:28	8:28	8:33	8:27	8:24	8:23	8:22	8:19	8:19	8:18	8:22	8:23	8:29		
24:34	32:42	45:49	49:05	57:12	65:30	74:15	85:53	102:08	110:19	118:39	126:48	135:22	143:32	151:46	160:04	168:18	177:12.65	Fifth	
8:10	8:08	8:07	8:16	8:07	8:18	8:45	11:38	16:15	8:11	8:20	8:09	8:34	8:10	8:14	8:18	8:14	8:54		
30:44	39:12	47:40	56:08	65:05	73:59	82:58	91:40	100:18	109:05	117:42	126:13	134:44	143:20	151:50	160:24	168:56	177:37.83	Sixth	
8:46	8:28	8:28	8:28	8:57	8:54	8:59	8:42	8:38	8:47	8:37	8:31	8:31	8:36	8:30	8:34	8:32	8:41		
24:47	32:50	40:50	59:32	67:51	76:17	84:47	93:03	101:22	109:37	118:08	126:29	134:46	145:09	153:33	161:51	170:05 1	78:16.17	Seventh	
8:07	8:03	8:00	8:42	8:19	8:26	8:30	8:16	8:19	8:15	8:31	8:21	8:17	10:23	8:24	8:18	8:14	8:11		
33:43	46:24	60:29	71:01	84:11	106:56	120:40	133:46	148:18	160:33	171:53	183:09.15	Out							
11:01	12:41	14:05	10:32	13:10	22:45	13:44	13:06	14:32	12:15	11:20	11:16								
31:04	40:26	49:21	58:08	67:03	Out—	Car Turned Over													
13:28	9:22	8:55	8:47	8:55															
31:52	40:50	49:39	59:34	68:46	Out—	Hit Telephone Pole.													
8:54	8:58	8:49	9:55	9:12															
34:03	53:14	52:37	Out—	Seized Piston.															
9:07	9:11	9:23																	



PEARCE IN COLBY AND JENKINS IN COLE ON HORNBEEK'S TURN IN KANE COUNTY RACE

Aurora Cup Winner

tage of more than 10 minutes over Robbins' car, and although the latter from that point onward gained ground consistently on its little rival, it was unable to overcome the handicap caused by mechanical troubles in the early rounds of the race, and finished about 7¾ minutes behind the Ford.

It was an interesting fight between Roberts and Kulick and a stop for Roberts would have been disastrous. Kulick did not have demountable rims, his casings being clinchers and fastened with lugs. A puncture at any time would have meant the elimination of the Ford, but fortunately Kulick kept moving.

TABLE SHOWING LAP POSITIONS IN AURORA CUP

No.	Car	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Lap 6	Lap 7	Lap 8	Lap 9	Lap 10	Lap 11	Lap 12	Lap 13	Lap 14	Lap 15	Lap 16
31	Abbott-Detroit	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
32	Ford	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2
33	Abbott-Detroit	2	2	1	3	3	3	3	3	3	3	3	3	3	3	3	3

BY ROBERTS IN ABBOTT AT AVERAGE OF 53.8 MILES PER HOUR

6 50 Miles 4434 Ft.	7 59 Miles 1653 Ft.	8 67 Miles 4152 Ft.	9 76 Miles 1371 Ft.	10 84 Miles 3870 Ft.	11 93 Miles 1089 Ft.	12 101 Miles 3588 Ft.	13 110 Miles 807 Ft.	14 118 Miles 3306 Ft.	15 127 Miles 525 Ft.	16 135 Miles 3024 Ft.	Position at Finish	Miles per Hour, Average.
55:54	65:05	74:37	84:01	93:11	102:40	112:28	122:05	131:42	141:13	151:11:32	First	53:80
9:12	9:11	9:32	9:24	9:10	9:29	9:48	9:37	9:37	9:41	9:48		
59:20	69:10	79:11	88:56	98:57	109:00	118:59	129:04	159:08	149:08	159:11:53	Second	51:09
9:53	9:50	10:01	9:45	10:01	10:03	9:59	10:05	10:04	10:00	10:03		
69:23	78:44	88:11	97:36	106:51	116:14	125:34	134:51	144:39	154:01	166:56:52	Third	48:72
9:17	9:21	9:27	9:25	9:15	9:23	9:20	9:17	9:48	9:22	12:55		

MONCKMEIER IN STAVER

What Was Done at the Pits at Elgin

NEW SCORING SYSTEM DESIGNED BY CHICAGO MOTOR CLUB

Most of the Troubles Caused by Lack of Lubrication—First Stop Made To Change a Tire

AN hour before starting time on the first day the racing cars entered in the Illinois, Kane County and Aurora cup events began to line up opposite their respective pits, where they immediately were taken in hand by the technical committee for the final examination. This examination was not a fruitless one, for several of the cars appeared for the start with ignition wires and gasoline pipes taped in a very much more substantial manner than was customary in the regular stock chassis construction. All of these extra precautions counted for naught, for this tape had to be removed, much to the chagrin of the drivers and mechanicians. Herein lies one of the many benefits to be obtained from stock car racing. The weakness will out, and the maker, if he be a conscientious one, will profit by his experience and strengthen not only his racing cars but those which he sells to the public as well.

At 10:40 A. M. nineteen out of the twenty-three cars entered in the three events were lined up near the tape in the order of their start. The three Falcars entered had not even shown up for practice and the Cino No. 26 had been disabled in practice the day before. At the tape Nikrent's Staver was withdrawn because of a broken bolt in the engine base.

Promptly at 11 o'clock the first car was sent away by Starter Wagner. This was the National No. 1, with Donald Herr at the wheel. The rest of the cars entered in the 203-mile Illinois and 169-mile Kane County cup events followed at short intervals of 15 seconds; and 15 mnutes later the Aurora cars started.

The last car hardly had left the tape when the first stop was made at the pits, Robillard in a Staver stopping for a tire. Half a minute later Jeffkins in a Voile also stopped for a minute at his pit for a tire and water; and 4 minutes after he had gotten away Gaston Morris drew up to the pit for a tire. It was evident that these drivers were pushing their mounts to the limit, as each required a new tire at the end of the first lap.

Early Stops at the Pits

At the end of his second lap Raimey, who was driving Andy Burt's Cino car, stopped at the Cino pit to exchange an injured tire, which had been replaced on the road, for a fresh one. The Velie driven by Stickney was the first to suffer mechanical trouble. At the end of the third lap a stop of 12 minutes was made, during which time Stickney replaced a couple of pushrods that had become stuck in their guides; while the mechanician worked on the hand oil pump, which was broken. While these repairs were being made, Armstrong, in his Colby, stopped 4 minutes to replace a reinforcement bolt that had been lost from the engine gearcase. The sleeve that is used inside of the case had dropped down into the case and was rattling around harmlessly, but considerable oil was being lost through the bolt holes. For the want of an extra

CARBURETER, MAGNETO AND TIRE EQUIPMENT OF

ELGIN NATIONAL

No.	CAR	CARBURETER	MAGNETO	IGNITION SYSTEM	TIRES
1	Alco	Gray	Bosch	Single	Michelin
2	National	Schebler	Splitdorf	Double Dis	Michelin
3	Pope-Hartford	Pope-Hartford	Bosch		Racine
4	Simplex	Simplex	Bosch	Double Dis.	Michelin
5	Alco	Newcomb	Bosch	Double Dis.	Michelin
6	National	Schebler	Splitdorf	Double Dis.	Michelin
7	Alco	Newcomb	Bosch	Double Dis.	Michelin
9	Mercer	Schebler	Bosch	Double Dis.	Michelin
11	Simplex	Simplex	Bosch	Double Dis.	Michelin
12	Lozier	Rayfield	Bosch	Double Dis	Michelin

ILLINOIS TROPHY

No.	CAR	CARBURETER	MAGNETO	IGNITION SYSTEM	TIRES
1	National	Schebler	Splitdorf	Double Dis	Michelin
2	Velie	Rayfield	Remy	Dual	Michelin
3	National	Schebler	Splitdorf	Double Dis.	Michelin
4	Velie	Rayfield	Remy	Dual	Michelin

Few Cases of Mechanical Trouble

Technical Committee Rules Against Taping Ignition Wires and Gasoline Feed Pipes

bolt, the holes were plugged with wood and the car again sent on its way. As Armstrong drew away from his pit, Ogren in another Colby coasted past and brought his car to a stop about 100 yards beyond the repair pits, where it was left throughout the race. There had been a leak in the oil supply and the pistons had seized in the cylinders for the want of lubricant.

The Staver driven by Monckmeier was brought to a halt at the pits at the end of the fifth lap, so that the auxiliary oil tank, which had been broken, could be removed, and water taken on. For the want of oil, the motor had become so hot that when the radiator cap was loosened it shot up into the air and water and steam spouted from the radiator. In 4 minutes, however, the little car again rushed forth.

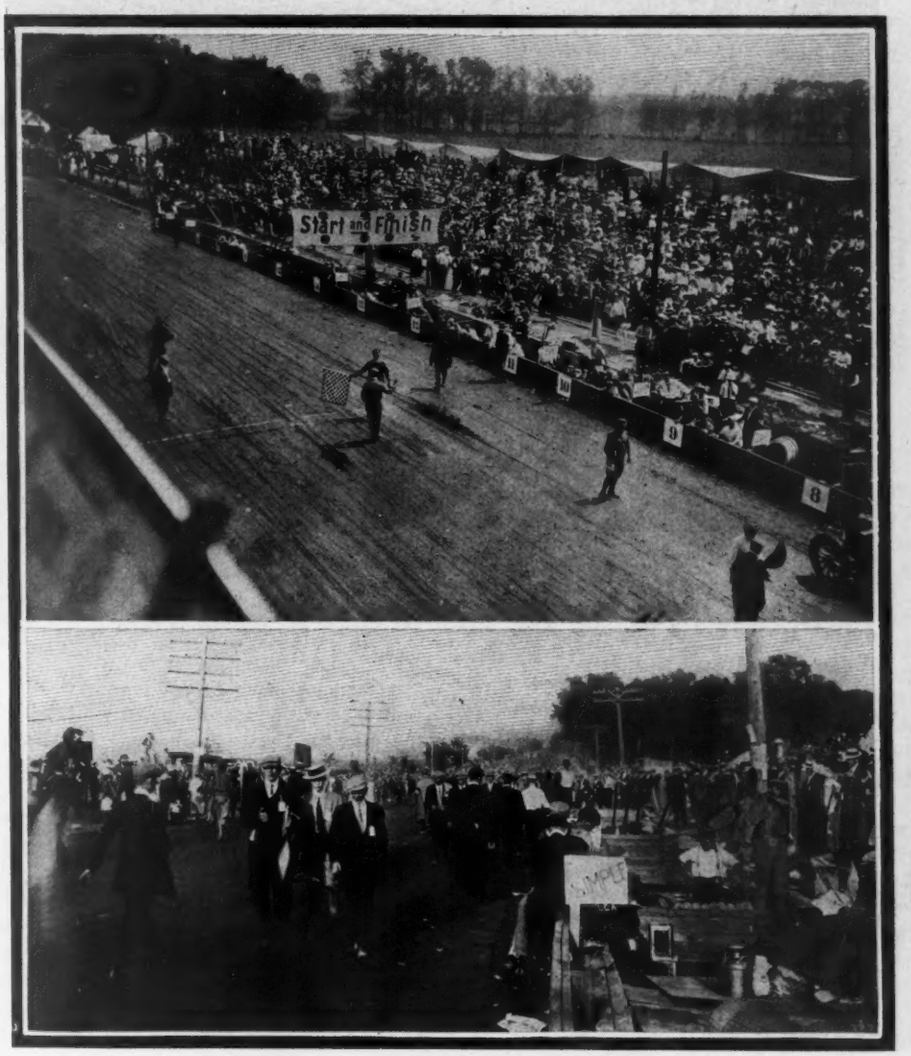
Armstrong Has Trouble

Armstrong's Colby was brought to a stop for the second time at the end of the seventh lap. At this time 8 minutes were lost. The nut from the right rear spring shackle had been lost, and was being replaced by the driver, while the mechanician was sent down the course to take a bolt from the engine gearcase of Ogren's disabled car. Having replaced the lost engine bolt and fitted a new bolt in the spring shackle the car again was ready except for the want of oil to replace that which had been lost through the bolt holes in the engine gearcase. It happened that the pit attendants had neglected to put in an extra supply of oil and after several minutes' delay the car started off without it.

Jeffkins' Velie stopped at the pits for the second and last time on its eleventh lap, to take on oil and adjust the carbureter. Two minutes were required to do the work. Fifteen minutes later Stickney stopped for 9 minutes to replace a couple more valve tappets and take on water and gasoline.

After making six more laps on a diminished supply of oil in the motor, Armstrong again brought his Colby to a stop in front of the pit. A supply of oil had been obtained, but when an effort was made to pour it into the tank, the tires were in the way and no funnel was at hand. The result was that half the oil was poured on the ground and the tires, and half into the tank. The motor was so stiff from running so long without sufficient lubricant that the mechanician could not crank it; but a husky pit attendant managed to do this and the car was on its way after a delay of 4 minutes. That the Colby company is new in the racing game was apparent. Too much was left to Pearce, the driver of the third Colby entry, who had his hands full during the race to bring his car into third place at the finish. A much better showing might have been made by the other Colby entries had it not been for the poor repair pit management and equipment.

The last stop made at the pits was made by the Abbot-Detroit driven by Robbins on account of a lost magneto coupling.



TWO VIEWS OF THE PITS SATURDAY

THE CARS THAT COMPETED IN FOUR RACES AT ELGIN

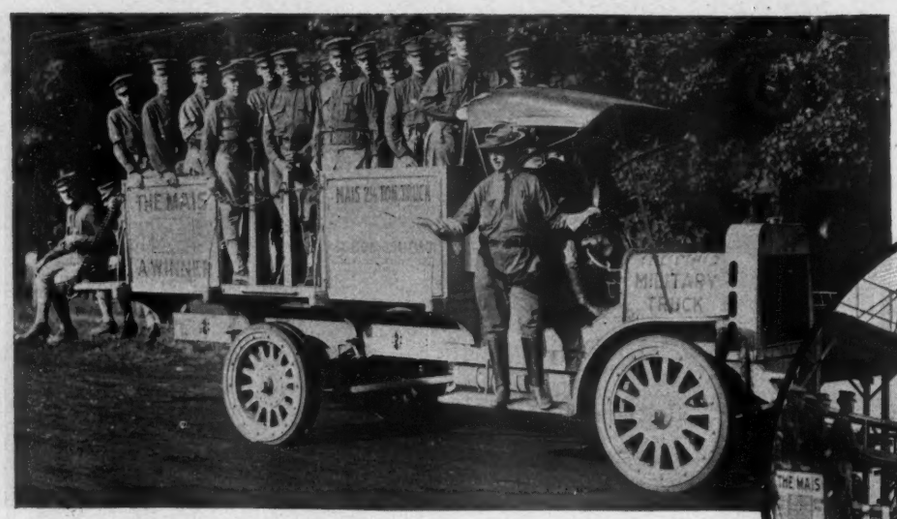
KANE COUNTY TROPHY

No.	CAR	CARBURETER	MAGNETO	IGNITION SYSTEM	TIRES
11	Cino	Stromberg	Remy	Double Dis.	Michelin
12	Mercer	Schebler	Bosch	Double Dis.	Michelin
14	Corbin	Miller	Bosch		Michelin
15	Mercer	Schebler	Bosch	Double Dis.	Michelin
18	Colby	Rayfield	Remy	Double Dis.	Michelin
20	Colby	Rayfield	Remy	Double Dis.	Michelin
21	Cole	Schebler	Bosch		Michelin
22	Colby	Rayfield	Remy	Double Dis	Michelin
24	Cole	Schebler	Bosch	Dual	Michelin
25	Staver-Chicago	Rayfield	Remy	Double Dis.	Michelin
27	Staver-Chicago	Rayfield	Remy	Double Dis.	Michelin

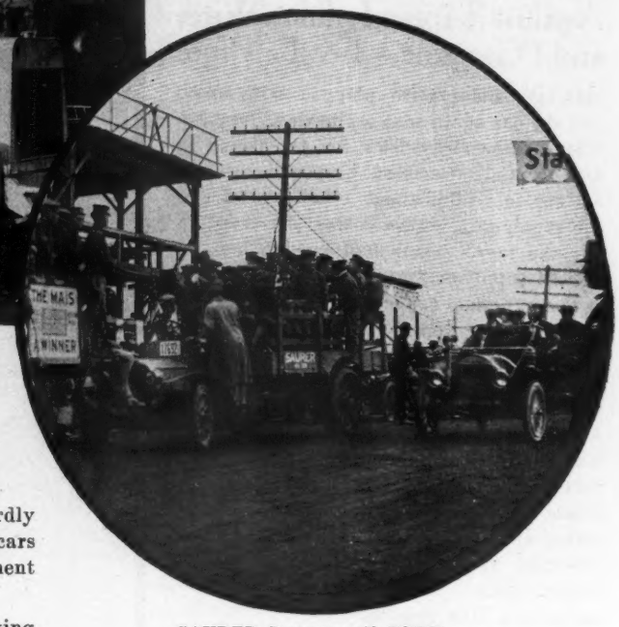
AURORA TROPHY

No.	CAR	CARBURETER	MAGNETO	IGNITION SYSTEM	TIRES
31	Abbott-Detroit	Mayer	Bosch	Single	Michelin
32	Ford	Kingston	Ford	Single	Michelin
33	Abbott-Detroit	Mayer	Bosch	Single	Michelin

Lessons Taught By the Contests



MAIS TRUCK CARRYING SOLDIERS



SAURER TRUCK ON DUTY

With one or two exceptions, there was considerable more snap to the work of the pit attendants during the big race pulled off on the second day. Johnny Aitken's National was the first of the big cars entered in the Elgin cup event, to stop at the pits, and this was at the end of the first lap. The auxiliary air-valve spring of the carbureter seemed to be at fault, for it was replaced by a new one, while Johnny fussed and fumed around the pit, threatening to quit. In 3 minutes, however, the carbureter was repaired.

The next stop was made by Buck in a Pope-Hartford, to take on a fresh tire in place of one which had been replaced on the road. Less than a minute was required to make the change. This was just the start of considerable tire trouble for Buck which eventually caused the death of both Buck and Jacobs, his mechanician.

De Palma Is Out

After making two laps in excellent time, Ralph de Palma's Simplex was silently brought to a stop at the side of the road at the end of the pits. The engine had been stopped some distance up the road and the car had simply coasted down to the grandstand, where it was left by the roadside. The flywheel had broken.

At the end of the fourth lap, Buck again brought his Pope-Hartford to a halt at the pits for another tire and to remove the speedometer shaft which was broken off when the tire of the right front wheel came off. A few minutes later Johnny Aitken's National rolled up to the pits, then backed off onto the side of the road behind de Palma's disabled Simplex, with the rear cylinder cracked.

Buck stopped again on the seventh lap to take on another tire; and 5 minutes later Ralph Mulford's Lozier rolled down on the side of the road behind Aitken's National. A connecting rod bearing of the front cylinder had been burnt out, the rod had been broken and pushed a great hole in the crankcase, the oil had been lost, and the motor was running spasmodically from the overheated condition with the ignition cut out. It was necessary to shut off the gasoline to stop the motor. The great race was hardly started, and here lay the cars of three of the prominent stars.

After succeeding in making four laps without stopping at the pits for tires. Buck came up to the grandstand at the end of the eighth with the right rear tire dangling from the axle. Three minutes elapsed before the old tire was removed and a new one replaced. By this time the Pope-Hartford pit had used up all of its extra tubes, and the team manager was kept busy borrowing tubes from officials and others having spares of the required size in their cars.

Frank Lee's Alco made its first stop at the pits on the eleventh lap; two right rear and one left rear tires had been replaced on the road and the stop was made to take on a fresh supply. There also was some trouble with the hand oil pump, so the piston was removed and the cylinder plugged with a cork. After replenishing the water supply in the radiator, the car was again put under way; 3 minutes' time having been lost. Harry Hartman's Alco made its first stop at the pits at the end of the fourteenth lap, and two rear tires were changed and water administered to both the crew and the car.

Buck, who was finishing his twelfth lap, made the next stop to take on a tire. A few minutes later Hartman again drove up with his Alco to take on oil and gasoline, to change a left rear tire, and replace a spark plug lead that had become disconnected. This caused a delay of 4 minutes.

There was considerable excitement in many of the pits when Len Zengel, in the winning National, drove up to the pits for the first time at the end of his twenty-first lap. He did not tarry long, however.

Frank Lee's Alco drew up to the pits on its eighteenth lap for oil, water and gasoline, and a left rear tire; and during the 4 minutes consumed Harry Grant also brought his car to a stop for the first time during the race. The stop endured for but a minute and a half, during which time gasoline and water were taken on. Even this, however, was rather poor service on the part of the pit attendants, for it took the National but half a minute to take on gasoline, water and oil as well. At the end of his sixteenth lap, Buck made another stop for oil, gasoline and tires.

Hughie Hughes, whose little Mercer was running like a watch, stopped at the pit for the first time at the end of the twenty-first lap for gasoline, oil and water. Lee's Alco stopped for 1 minute on the twenty-fourth lap to replace a left rear tire.

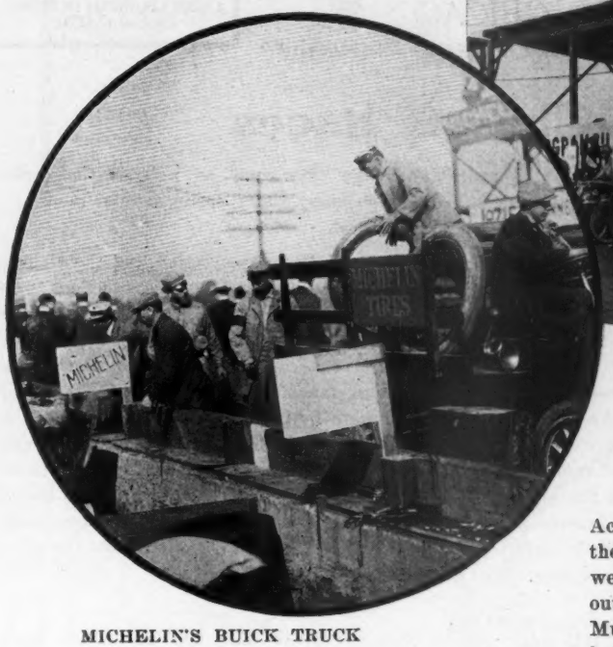
At the end of the thirty-second lap Len Zengel brought his car to a stop at the pit for the second time for gasoline; and 5 minutes later Grant called a halt of 1 minute to change two tires.

WINNERS OF THE STROMBERG PRIZES FOR THE FASTEST LAPS

Race—	Car	Driver	Lap	Time	Miles per hr.
Elgin National	Lozier	Mulford	7th	7:13	70.45
Illinois Trophy	National	Herr	2d	7:23	67.96
Kane County	Mercer	Hughes	16th	7:41	66.2
Aurora	Abbott	Roberts	4th	9:00	56.48

Analyzing Work of Racing Cars

FLAGMEN RODE MOTOR CYCLES



MICHELIN'S BUICK TRUCK

IN analyzing the work of the thirty-five stock cars entered in the four different races not a few very interesting conclusions are arrived at. In a word, the lower powered cars stood up much better under the strain than did the higher priced and powered ones. In the race for the Aurora the two Abbotts and the Ford all finished, there being but one stop in the entire run of the three cars. This was the Robbins' Abbott, to repair a magneto coupling. As might be expected, not one of them had to make a stop for a tire repair or to take on gasoline or oil.

In the Kane County race the field of eleven starters, seven finished the race and of the four to drop out two were wrecked due to tire explosions, one had a seized piston and the other had some unknown mechanical trouble.

In the race for the Illinois trophy only four cars competed and all were running at the finish.

Coming to the Elgin National, ten started and only four were running at the end, the race being called off after three had crossed the tape. Four out of ten is a small percentage for big cars.

The Eliminations

Considering all of the different classes of cars that competed and looking into the troubles that they had, it becomes at once apparent that lubrication troubles were perhaps the most serious and resulted in more eliminations than any other two or three troubles combined. In nine cases out of ten when a connecting rod breaks it is due to lack of lubrication and whenever a bearing goes it is directdly due to lack of lubrication. There were several cases of connecting rod bearings going. According to reports around the repair pits, the Lozier went out due to a burned out bearing, which stopped Mulford when the outlook was brightest; and one of the Colby entries had similar troubles. In the Velie pit the report was that trouble with push rods for lifting the valve stems was due to sticking, the steel rods seizing in the brass guides.

Lubrication always has been a big problem in the gasoline engine and in these days with higher engine speed and greater power the lubrication must be looked after or it will continue for some years yet to be a problem that designers will have to wrestle with. Since the advent of racing it has been a trouble and in spite of all the experience of past years it continues to hold a leading position in the trouble column.

Springs Stand Up Well

It is surprising how few troubles these races developed in the spring field. The days of broken springs in road races seem to be about over. This is due to several causes: In the first place the shock absorber equipment is more carefully watched, springs are generally well wrapped; and lastly the roads over which these races are run are generally speaking much better than they used to be. There was only one case of frame trouble, that being the Wishart Simplex. Rear axles that used to be so prolific in troubles are now entirely forgotten, so well do they endure under the trying grinds; and it is rarely that the spreading front wheels are seen, which means that front axles have been brought up to that standard which they should reach.

The troubles that come to steering parts on the brick speedway at Indianapolis were not noticed here, partly due to the road surface not setting up that constant vibration which is encountered on the bricked surface. There were one or two cases of what appeared to be wheel trouble during practice, but on race days not a car showed a single symptom of it.

One cannot but note the freedom from ignition and carburetion troubles. It used to be a common sight to see cars stop very frequently to adjust the carbureter. It is questionable if in the entire Elgin races there was a single stop made that was due to carbureter troubles. This speaks volumes for the energy of the carbureter builder, who is today following the racing sport with his headquarters tent, as is the tire man. A couple of years ago magneto troubles were reported very frequently, but they too have been eliminated and today the magneto is about as reliable a part of the gasoline motor as there is.

Bonuses added considerably to the winnings of the drivers, $2,175 being distributed among the pilots by the accessory concerns. In addition there was a $2,500 purse given by the Elgin association. Zengel received $1,000 for winning the Elgin National, $250 from Splitdorf, and $250 from Michelin, making his earnings $1,500. Grant collected $300 from Elgin, $100 from Bosch and $150 from Michelin. Hughes in this race got $200 from Elgin and $50 from Bosch. Mulford won the $200 Stromberg lap prize.

Herr pulled down the $400 purse in the Illinois and in addition was given $150 by Splitdorf and $150 by Michelin. He also won the Stromberg $100 prize for the fastest lap. Merz' only reward was $150 from Splitdorf. Hughes cashed $300 for first in the Kane County and in the way of bonuses he got $100 from Bosch, $100 from Michelin and $100 from Stromberg for the fastest lap. Barnes, second in this race, received a $50 bonus from Bosch, and Pearce collected $50 from Remy. Roberts in the Aurora won $300 for first and in addition received $100 from Bosch, $75 from Michelin and $100 from Stromberg for the fastest lap.

MOTOR AGE
Published Weekly by
THE CLASS JOURNAL COMPANY
910 South Michigan Avenue CHICAGO
NEW YORK OFFICE
239 West 39th Street
SUBSCRIPTION RATES
United States and Mexico
$3.00 per Year
Other Countries including
Canada $5.00
Entered as Second-Class Matter September 19, 1899, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

The National Stock Chassis Races

EVERYBODY is asking what caused the two fatal accidents on the Elgin road race course. A year ago, with a comparatively rough course, there was not a fatal accident, but this year, with a course 5 miles to the hour faster, two accidents happened in which three lives were sacrificed. Speed is the answer to the question. The cars are faster this year than they were last year, and the course is also much faster, due to the expenditure of over $8,000 on it by way of widening the narrow spots and resurfacing the rough ones. With the extra speed greater care on the driver's part is necessary. Higher speed means more tire trouble and more tire trouble means more chance for blow-outs, with the consequent danger of accidents. Both accidents that happened were due to tire blow-outs, one a rear tire and the other a front first and later a rear.

THE fact that three deaths were due directly to tire trouble at once suggests the necessity of a practical examination of racing drivers to ascertain in that they are competent to take care of cars when blow-outs occur at very high speed. Almost any person can handle a car at 50 miles per hour when a blow-out occurs, but it is an entirely different problem to handle that same car at 70 miles per hour when a blow-out occurs. The latter case calls for specially quick judgment as to which tire has exploded and equally quick physical control of the machine. Both of the Elgin accidents happened on good wide stretches of road and the details as to the accidents will never be known, further than that eye witnesses saw both and heard the tires explode.

IT was demonstrated several years ago that on a straightaway a blow-out is not necessarily dangerous; this was done by placing in the path of the car slight obstructions that destroyed one or two of the tires as the car was traveling over 75 miles per hour. Experience in this work would help a score or more of American road race drivers and would greatly reduce the number of accidents. Have the Motor Racing Drivers' Association set apart 2 or 3 days during each season for the examining of racing drivers. Try the drivers out with tire troubles at different speeds on roadways without fences or ditches and where if the car got beyond control it could not injure anyone. Give them tests on the best methods of taking different corners at high speed, etc. The results would be very valuable. Not a few drivers who are now permitted to pilot racing machines would lose their license and the sport of motor racing would be greatly aided. It is up to the contest board of the American Automobile Association to take this matter up with determination and get the Motor Racing Drivers' Association to look after the practical end of the examinations.

ONE commendable feature in connection with the Elgin races was the medical examination of the different drivers before the start of the race, in fact 2 days in advance. This was the first time in America that such an examination was conducted and the results were more than satisfactory. There were two doubtful cases of drivers' hearts that the doctors hesitated about passing and one of these had a bad accident that might easily have ended fatally. The heart action is something that not a single driver can conceal. If the action is at all intermittent it at once suggests suspicion of the ability of the driver to exercise that cool judgment so necessary in an emergency as well as that quick action that must be taken so many times during a road race.

THE Elgin Automobile Road Race Association and the Chicago Motor Club are to be congratulated on the excellent work done in connection with staging the performance. The former association gained the consent of all farmers fronting on both sides of the course and prepared the roadway and built the fences. Every safety precaution was taken. Where the roads were not fenced, woven wire fences were built; double fences were built at the corners where there was danger of a car leaving the course and running amuck into the turn, with wide neutral zones between the fences; safety walls were built in front of the pits and stands to prevent any possible danger of accident; the course was made into the safest possible, and the roadway was oiled from the grass at one side to the grass at the other side.

THE work of the Chicago Motor Club was up to the mark in every respect. Not a spectator was allowed on the course from start to finish; the timing was by the Warner electrical timer; around the course were eleven score boards connected by telegraph with the main score board at the grandstand; megaphone announcers were positioned at every mile around the circuit where the score boards were located; special facilities were furnished for the press, and in fact in every detail and every precaution taken to make the race worth while to the entrant as well as safe to both contestants and spectators.

THE falling of one end of the grandstand was the deplorable accident of the meet. It occurred just as the enormous crowds were expecting the first car to complete the first circuit. Excitement was at the highest point. Every one of the 6,600 grandstand spectators rose and leaned in the direction of the rushing car. The strain was too great, there was a slight shuddering and then a slow sliding collapse. It is marvelous how few injuries happened. Another year a permanent cement grandstand will be erected.

WITH the continuous talk among many makers for non-stock races it is to be hoped that the promoters of the Elgin races will continue to follow the stock idea. Thousands attend these races solely because they want to see stock cars perform; they want to see cars in operation that they can buy in any salesroom in the country selling that particular make of car. Even in a stock car race each buyer realizes that the cars are tuned up for the race. That is done in every sporting event. What short-distance runner would enter a big event without preparation; what athlete would enter any competition without preparatory training; they why should stock cars not be tuned up? Tuning up is a good thing in that it acts as an object lesson to a maker as to what can be obtained from a stock car when all parts are in the best possible condition. Much of the talk against stock car races is due to what is called the impossibility of enforcing the stock car rules. Many makers of stock cars know the limitations of their stock car products and refuse to go into contests against the other makes of stock cars which are faster than they are. These same makers will go into free-for-all events because they think that by doctoring their cars in every imaginable way they will have a chance of beating the other fellow.

Pen and Ink Impressions of the National Road Races at Elgin

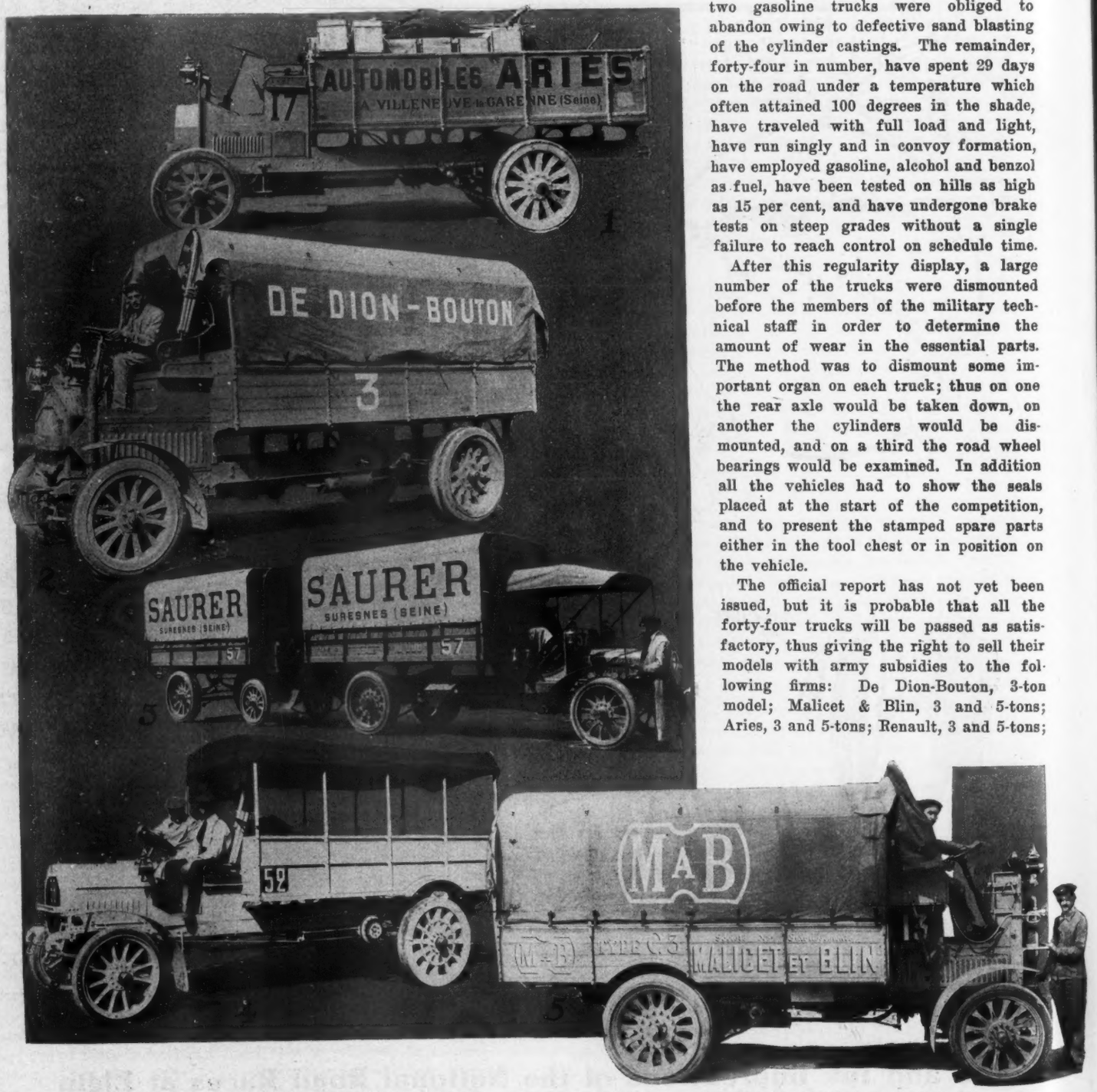
French Army Truck Tests Completed

RESULTS of the military commercial trials in France have been announced, and the government of France will grant subsidies to the following makes of motor wagons: De Dion, 3-ton model; Malicet & Blin, 3 and 5-ton; Aries, 3 and 5-ton; Delahaye, 2 and 3-ton; Delaugere-Clayette, 3 and 5-ton; Berliet, 2 and 5-ton; Vermorel, 3-ton; front-drive Latil, 3-ton; Peugeot, 3 and 5-ton; Bayard-Clement, 2½-ton; Saurer, 3 and 5-ton with trailers. Forty-eight vehicles took part in the test, which lasted a full month, only four being eliminated

PARIS, Aug. 18—Commercial vehicles never have been more successful in any test than in the one which has just been brought to a close by the French army authorities. At the outset there were forty-eight vehicles presented for a full month's trial with a view to securing the certificate allowing them to participate in the army subsidy system. After 3 days two steam wagons—the only ones in the competition—had been withdrawn in an unsatisfactory condition, and two gasoline trucks were obliged to abandon owing to defective sand blasting of the cylinder castings. The remainder, forty-four in number, have spent 29 days on the road under a temperature which often attained 100 degrees in the shade, have traveled with full load and light, have run singly and in convoy formation, have employed gasoline, alcohol and benzol as fuel, have been tested on hills as high as 15 per cent, and have undergone brake tests on steep grades without a single failure to reach control on schedule time.

After this regularity display, a large number of the trucks were dismounted before the members of the military technical staff in order to determine the amount of wear in the essential parts. The method was to dismount some important organ on each truck; thus on one the rear axle would be taken down, on another the cylinders would be dismounted, and on a third the road wheel bearings would be examined. In addition all the vehicles had to show the seals placed at the start of the competition, and to present the stamped spare parts either in the tool chest or in position on the vehicle.

The official report has not yet been issued, but it is probable that all the forty-four trucks will be passed as satisfactory, thus giving the right to sell their models with army subsidies to the following firms: De Dion-Bouton, 3-ton model; Malicet & Blin, 3 and 5-tons; Aries, 3 and 5-tons; Renault, 3 and 5-tons;



1—ARIES; 2—DE DION-BOUTON; 3—SAURER WITH TRAILER; 4—PEUGEOT; 5—MALICET & BLIN

Government Gives Winners Subsidies

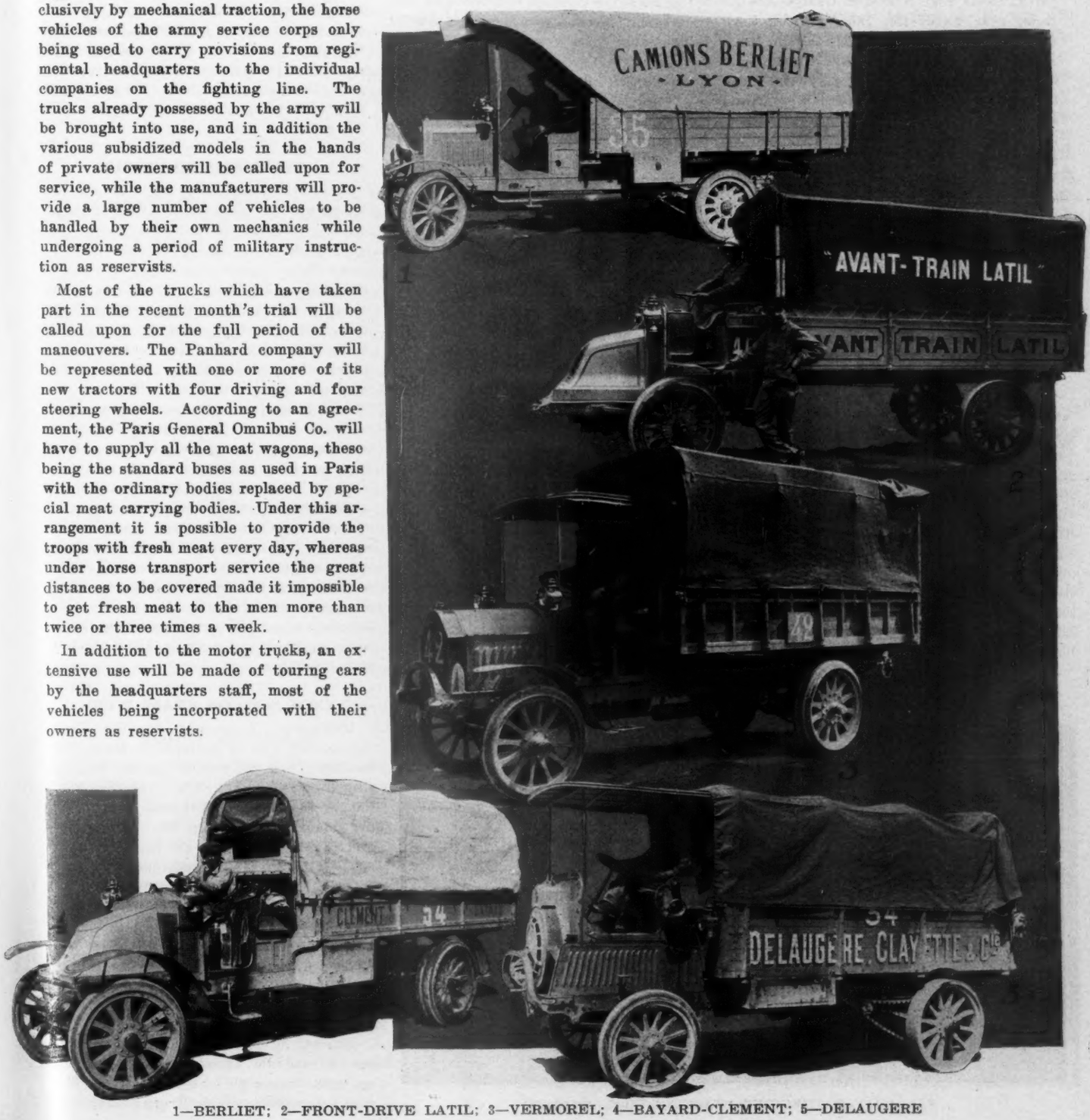
Delahaye, 2 and 3-tons; Delaugere-Clayette, 3 and 5-tons; Berliet, 2 and 5-tons; Vermorel, 3-tons; front drive Latil, 3-tons; Peugeot, 3 and 5-tons; Bayard-Clement, 2½-tons; Saurer, 3 and 5-tons with trailers.

The next important army motor truck demonstration will be in connection with the military manoeuvers to be held during the month of September. On this occasion two complete army corps will be supplied with food and ammunition exclusively by mechanical traction, the horse vehicles of the army service corps only being used to carry provisions from regimental headquarters to the individual companies on the fighting line. The trucks already possessed by the army will be brought into use, and in addition the various subsidized models in the hands of private owners will be called upon for service, while the manufacturers will provide a large number of vehicles to be handled by their own mechanics while undergoing a period of military instruction as reservists.

Most of the trucks which have taken part in the recent month's trial will be called upon for the full period of the maneouvers. The Panhard company will be represented with one or more of its new tractors with four driving and four steering wheels. According to an agreement, the Paris General Omnibus Co. will have to supply all the meat wagons, these being the standard buses as used in Paris with the ordinary bodies replaced by special meat carrying bodies. Under this arrangement it is possible to provide the troops with fresh meat every day, whereas under horse transport service the great distances to be covered made it impossible to get fresh meat to the men more than twice or three times a week.

In addition to the motor trucks, an extensive use will be made of touring cars by the headquarters staff, most of the vehicles being incorporated with their owners as reservists.

ACCORDING to the announcement of the French government, the subsidy means that the purchaser of an approved truck, carrying a minimum useful load of 2 tons, will receive from the government $400 on taking delivery of his vehicle and $200 for each of the 3 following years, providing, of course, that the vehicle is presented for inspection annually and is maintained in proper working condition. For each addition of 550 pounds to the minimum useful load of 2 tons an additional subsidy of $30 on purchase and $10 per annum will be allowed



1—BERLIET; 2—FRONT-DRIVE LATIL; 3—VERMOREL; 4—BAYARD-CLEMENT; 5—DELAUGERE

Chicago Pathfinders Blazing Trail

Route for Reliability in October Running Through Five States, Now Being Laid Out by Motor Club Men in Halladay—George Ade Offer His Farm for First Noon Control

CHICAGO, Aug. 31—The route for the 8-day reliability run of the Chicago Motor Club, set for October 6-13, is being laid out this week by J. P. Dods, of the Official Automobile Blue Book, in a Halladay driven by George Daubner. Reports from the scouts are interesting, it being reported today that Hazelden, George Ade's farm, near Lafayette, Ind., will be the first noon control, and that the drivers and officials will be royally entertained by the famous novelist and playwright as long as they can be persuaded to remain at this beautiful little spot just outside the village of Brook. Mr. Ade extended a most cordial invitation to the Chicago Motor Club to enjoy his hospitality following the visit of the Halladay pathfinder Monday. He promises as one of the big attractions a chicken dinner.

This feature of the tour came up as a result of the swinging of the pathfinders from the usual route to Indianapolis to follow the road which was personally laid out by Mr. Ade some time ago and which has been named for him. As the tourists neared Mr. Ade's attractive grounds they could not resist the temptation to stop and they were given a true Hoosier welcome without more ado. Mr. Ade is very enthusiastic about the tour and will leave nothing undone in the way of entertainment for his host of guests. It is quite probable that a special guest car will be fitted up for him and that he may be persuaded to make the remainder of the trip with the contestants on the run.

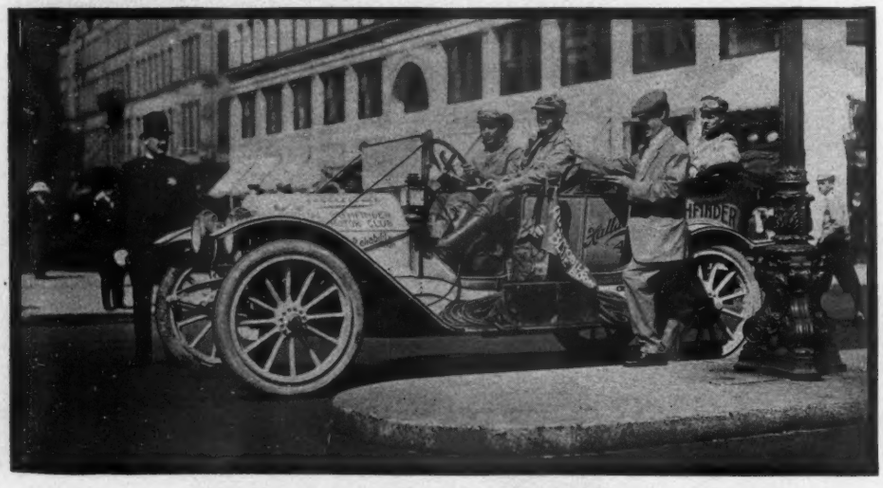
The new route is a trifle longer but this is compensated for in many ways. Possibly 2 or 3 miles of rather soft going are encountered but these spots are no worse than those struck on the more traveled Indianapolis road and surely not so long, while, when the good roads are reached, they are far superior to any other route yet offered. In addition to this, every inch of the bad spots will be turned into hard roads before next summer, so that in the end this will probably be the popular run to the Hoosier capital.

Upon leaving Chicago it was found that Indianapolis avenue was again open after being closed for several weeks for resurfacing. It is now in splendid shape for motorists. At St. John, 37 miles out, a new stretch of fine road was found by turning south at the center of the town, continuing thus into Crown Point and cutting off a mile. At Thayer, 61.4 miles out, the parting of the ways was reached and, continuing south there, the old Indianapolis route was left to follow the George Ade road. The next town hit was Morocco, 82.7 miles out, and then Brook at a mileage of 92.7. It is just beyond there, 94.9 miles out of Chicago, that Ade's farm is located, an ideal spot for the noon control as it is, almost to the mile, half way between Chicago and Indianapolis, the first night's control.

Goodland lies next in line at 104 miles, then Fowler at 115.4 miles; Oxford at 125.9 miles; Otterbein, 135.8; Mt. Morencie, 139.7 miles, and then into La Fayette, an even 148 miles. A few soft spots are struck just south of Thayer, but the rest of the distance can be likened almost to boulevards, so far as country roads go. All are gravel or stone.

BUFFALO ROUTE COMPLETED

Buffalo, N. Y., Aug. 29—Present indications are that at least thirty cars will start in the second annual reliability tour, to be run September 6-9 under the auspices of the Automobile Club of Buffalo, for the Laurens Enos and other trophies. The pathfinding work for the tour was completed on August 19, under the direction of Dai H. Lewis, veteran of many A. A. A. tours and secretary of the Automobile Club of Buffalo. An E-M-F 30 has been assigned as the official pathfinder and pilot car for the contest and will be driven over the 800-mile course by George Meinzinger. Following the precedent of last year, each day's run of 200 miles will start and finish in Buffalo. The technical end of the event will be in charge of the contest board of the A. A. A. The course thoroughly covers western New York from Lake Erie to Lake Ontario, and embodies elements most ideal for a reliability contest. The Laurens Enos trophy was won last year by Charles F. Monroe, Buffalo, representative of the United Motor Co., in a Maxwell. Mr. Monroe his entered four cars in this year's event to defend the cup.



HALLADAY PATHFINDER STARTING FROM CHICAGO

COAST RELIABILITY RUN

San Francisco, Cal., Aug. 29—Special telegram—Six cars out of fifteen finished with perfect scores today in second annual endurance run from this city to Lake Tahoe and return. The distance is 520 miles, a goodly part of which is through Sierra Mountains, rising 7,000 feet, with many very steep grades and badly twisted roads. The cars that survived the ordeal were: American 50, Buick 26 and Buick 30, Flanders 20, Franklin 18 runabout and Winton six.

The run proved to be unusually severe upon tires, owing to heat of the valleys and severe grades over rough mountain roads. Many of the cars suffered from punctures, and the running time was so fast that they had to use a good deal of speed to keep up with the schedule. Last year the contestants complained that the schedule was too slow, but this year there was no complaint on this score. The schedule averaged more than 20 miles an hour on level, and over 15 miles through the mountains.

KNOX SUES ON CRANE BOND

Milwaukee, Wis., Aug. 30—The Knox Automobile Co., of Springfield, Mass., has instituted suit for $10,000 against William Crane, of Milwaukee, Wis. The complaint alleges that George A. Crane, son of the defendant, contracted for the Knox agency and the father signed his bond for $10,000. It is further alleged that Mr. Crane sold or secured from the Massachusetts company many cars and did not pay for them, that it was not possible to collect what was due and that afterward Mr. Crane went into liquidation. The suit is to recover the amount of the bond.

DETROIT HAS SIGN FEVER

Detroit, Mich., Aug. 28.—The Wolverine Automobile Club is prosecuting an energetic campaign of road posting. The club's committee, in an Everitt loaned by

the Metzger company for the purpose, has posted both the main routes between Detroit and Toledo and is now at work on the main-traveled route between Detroit and Port Huron. The work will be prosecuted through the season, the next routes to be posted being Detroit to Saginaw and Detroit to Chicago, the last-mentioned highway being by way of Battle Creek and Kalamazoo. Signs of 1-inch lumber are used, black background and a large white arrow pointing the main highway. The name of the city toward which the route runs is tacked to each sign in copper letters. Through the courtesy of the Michigan Bell and Home Telephone companies, the Wolverine Club's committee has been able to make use of telephone poles for nearly all its signs. This has greatly facilitated the work of posting the signs by the Wolverine club's committee.

IOWA SHOW NOW ON

Des Moines, Ia., Aug. 26—Des Moines second annual Iowa state fair motor show opened today with the first motor floral parade ever held in Des Moines. Fifty cars, decorated from head lamps to tail lights, were entered in the floral pageant. The local dealers were practically all represented in the parade. A Carter car, driven by Mrs. Howard Schneider, of Newton, Ia., was given first prize of $75 for the most beautifully decorated car, while second prize went to the Iowa Auto Co.'s Staver car.

The show promises to be one of the big features of the state fair. The space beneath the immense steel grandstand is being used for an exposition hall, and 100 cars, representing every dealer in Des Moines, are being shown in this ampitheater, attracting considerable attention.

Ray Harroun and his Marmon Wasp are booked as one of the big attractions of the fair and during the week are to be pitted in a speed contest against one of the two Wright air men who are at the fair.

MEET AT MONTREAL

Montreal, Aug. 22—The 2-day meet here on August 20 and 21 on the Delormier Park ½-mile clay track, under the auspices of the Automobile and Aero Club of Canada, with Bob Burman as the chief attraction, proved exceptionally interesting and spectacular. A feature of the first day's performance was Burman's success in breaking the track mile record, as well as his own record, on a ½-mile track. Burman shattered Oldfield's 1-mile record for Delormier park by 3 seconds, completing the distance in 1:07. The second day's racing he cut a fifth off the previous day's time, doing the mile in 1:06⅘. He also pulled the ½-mile record down by two-fifths of a second, thus crediting world's records to Montreal.

Gossip of the Motor Trade in Detroit

Census Figures Give the Industry Credit for Michigan's Strong Showing in a Manufacturing Way—New York Stock Exchange Lists General Motors—Studebaker Agents to Meet

DETROIT, MICH., Aug. 28—The motor car industry is given large credit for the enormous increase which United States census statistics show for Michigan during the past 5 years. During that period Michigan's investment in manufacturing increased from $337,894,000 to $583,947,000; salaries and wages paid from $98,749,000 to $153,838,000; and the value of the products, less cost of material, from $190,039 to $316,497,000.

While the most remarkable strides have been made by Detroit, Flint, Pontiac and Lansing, the state in general has become a hive of motor car activity. In fact, the largest increase in number of plants this year has been chronicled outside the centers mentioned. One of the new factories is that of the Gaylord Motor Car Co., of Gaylord. This city is located well up in the northern part of the lower peninsula. The Gaylord company already has experimental models undergoing tests. A. B. C. Comstock, a wealthy lumberman, is president; John A. Hixon, vice-president; John J. Munger, secretary, and J. Lee Morford, treasurer.

Another new Michigan firm is the Michigan Adjustable Hub Co., of Bay City, which has started the manufacture of a boltless, adjustable wheel, said to be capable of withstanding a load of 43,000 pounds. The company is investing heavily in machinery and its product will be a simple job to assemble, when the automatic machinery has done its work.

A local change of note is the increase of the capital of the Automobile Mfg. and Engineering Co., of Detroit, from $1,000 to $50,000.

It is announced from the local headquarters of the General Motors Co. that the New York stock exchange had granted an application for the listing of the firm's stock. Similar arrangements are being made in Boston. The first transaction on the New York exchange in the firm's stock was the sale of 100 shares at 51½.

The new plant of the Continental Motor Co. is about ready for the installation of machinery. It has been definitely decided that the Detroit factory of the firm will be made its general headquarters and the officers who have formerly been attached to the firm's plant at Muskegon are now removing their families to Detroit.

The E-M-F Co. plants of the Studebaker Corporation start this week a series of systematic gatherings of dealers which will be on a larger scale than anything in the history of the industry. The company has invited every one of its 1,800 retailers to visit the factory for 2 days, making the trip at the company's expense and being guests of the firm while in the city. The visits will be made under the auspices of the various branch managers, dealers tributary to the branches at Atlanta, Ga., and Birmingham, Ala., being selected to open the series.

In a recent address on "The Future of the Motor Trade" President Hugh Chalmers of the Chalmers Motor Co. stated it as his belief that 1912 would be a most prosperous year for the industry. He saw but one danger, that of overproduction, and urged fellow manufacturers to make careful estimates of the demand before forming their plans for the year. Mr. Chalmers called especial attention to the export trade and believes that the demand for medium priced American made cars from abroad will continue to increase. In his belief the future of the industry lies largely in thoroughly standardized cars of this type.

E-M-F PATHFINDER THAT BLAZED BUFFALO TRAIL

Routes and Touring

KANSAS TO ARKANSAS

COFFEYVILLE, Kan. — Editor Motor Age—I want to drive to Fayetteville, Ark., from here, and also to Texarkana, Ark. I should like the best route to these places; I don't care what towns the trip goes through.—Fred Oswald.

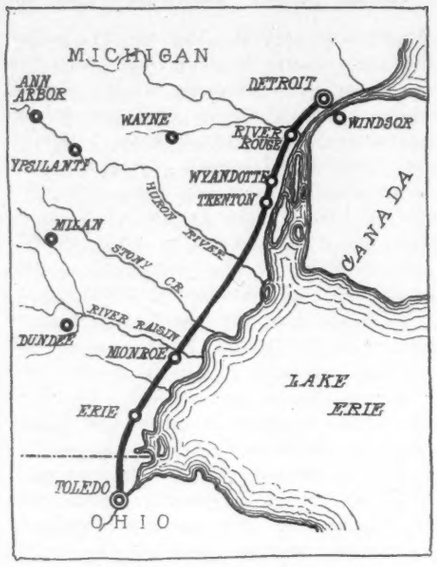
Travel to Lenapah, Lowata, Talala, thence over the Iron mountain road to Oolagah, 12 miles to Collinsville, and 22 miles along the Santa Fe railroad to Tulsa. From Tulsa motor to Muskogee, and it probably would be wise to inquire of some of the garagemen the exact road between these two points. From Muskogee to Fort Smith the roads are good until Sallisaw is reached; from this point on through the Ozark mountains the roads are not good, but the scenery undoubtedly will compensate somewhat for the bad road conditions. The motorist must not be afraid to ford streams in this part of the country, or fear chuck holes, for all will be found to have rock bottom. It is a short run north from Fort Smith to Fayetteville.

Fort Smith to Little Rock is through the following towns on country roads: Charleston, Paris, Dardanelle, cross the Arkansas river to Russellville, Pottsville, Atkins, Morrellton, Plumerville, Wooster, Conway, Palarm and Little Rock. If you will look at the map of Arkansas you will notice that Plumerville to Conway, by way of Wooster, is 8 or 10 miles out of the way. The reason for this is to avoid Caddo bottoms, which two-thirds of the year are impassable.

HOPE, ARK., TO SAN ANTONIO

Hope, Ark.—Editor Motor Age—I am contemplating a trip from here to San Antonio, Tex., by way of Dallas, and would like the best route. Can I obtain a tour book of this route, and what is the price of same?—H. W. Pierson.

According to the 1910 Glidden tour route book the itinerary to Dallas is through Fulton, Homan, Mandeville, Texarkana, Leary, Hooks, New Boston, Boston, De Kalb, Annona, Clarksville, Detroit, Blossom, Paris, Brookston, Hightown, Petty, Honey Grove, Windom, Dodd City, Bonham, Ely, Whitewright, Pilot Grove, Sadalia, Anna, Melissa, McKinney, Allen, Plano, Richardson and Dallas. Travel through Grand Prairie, Arlington and Handley to Fort Worth. Fort Worth to San Antonio, 315 miles, is through Crowley, Cleburne, Cuba, Grandview, Itaska, Hillsboro, Abbott, West, Waco, Lorena, Bruceville, Eddy, Troy, Temple, Little River, Sparks, Holland, Bartlett, Granger, Georgetown, Round Rock, Austin, Buda, San Marcos, Goodwin, New Braunfels, Selma and San Antonio. At Forth Worth you might be able to purchase a book on the Texas 1000-mile good roads tour, retailed at $1 a copy, from Dawson & Potter. This book gives the running direction and mileage from town-to-town from Fort Worth to San Antonio.



DETROIT-TOLEDO ROUTE

GOOD ROUTE CONTEMPLATED

Toledo, O.—Editor Motor Age—From Detroit to Chicago over perfect roads—this dream of the motorist is about to be realized when the 38 miles of road in Michigan territory leading from Toledo to Detroit is macadamized, as it will be this summer, and the old Detroit avenue road from Toledo to Maumee is paved. This also, it is expected, will be done this summer.

This highway is the old military road blazed through the forest by such patriots as Hull and Winchester, and before their time was an Indian trail. At present the stone road from Toledo to the Ohio state line is in perfect condition, having been redressed as recently as 6 months ago. The Michigan end of the road, however, is in such bad shape that during certain portions of the year it is impassable even to horse-drawn vehicles. From the state line to Monroe, Mich., the road is part clay and sand, the clay road being impassable during bad weather. The sand road is always good during the wet season, but in the dry season is a hard road to travel by motorists.

Between Monroe and Trenton the road is more or less clay with mingles of sand and swamp. The clay portion, as with the road farther south, is impassable during the wet season, when residents along the road are practically marooned. Some portions of the more sandy road are fairly good all seasons of the year and are traveled a great deal, although tourists always find them mealy.

Leaving Trenton the stretch from that city to Wyandotte is practically all concrete with the exception of three blocks of cinders which are struck just before entering the brick paving at Wyandotte. From Wyandotte to Detroit there is a continuation of the macadam road, which follows the river for nearly the entire distance. Here the scenery is worth traveling far to view.

Toledo motor enthusiasts met recently at Monroe, Mich., with Detroit and Monroe business men and formed a good roads club which has for its chief object the paving of this road between Toledo and Detroit. The unpaved portion covers about 38 miles and lies mostly in Monroe county. Most of the present roadbed is of sufficient width for a good highway and it is estimated that a perfect road could be constructed for $3,500 a mile.

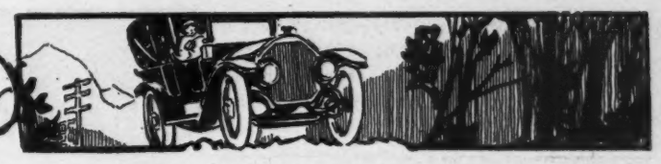
The state of Michigan will pay $1,000 a mile of this construction, leaving $2,500 a mile for Monroe county to handle. Generous Toledoans, members of the good roads committee, agreed to assist by donation in raising the funds necessary for this construction and the Detroit boosters present declared that for every dollar Toledo gave Detroit would give two.

Thus the new road has been assured. Not only will touring and resident motorists be delighted with this road, which, owing to its natural beauty and historic interest, will become one of the most popular short trips out from Toledo, but as Monroe, Mich., is the Gretna Green of northwestern Ohio, it will be one of Cupid's favorites, and many an eloping pair will find in the short cut and a good motor car a ready escape from a wrathful and pursuing father.

At Monroe, beside Justice Patrick Matthews and Rev. Howard Goldie, the marrying parson, who have joined enough couples between them to populate a town, one of the sights of interest is the Custer monument, recently erected at the birthplace of the gallant soldier; and another is the old whipping post, still standing as a monument to primitive methods of punishment.

This city was first settled in 1793, and was known as Frenchtown, because of the many French who settled there, transporting into the northern wilderness a bit of France with all its elegance and charm, which were characteristics of these people wherever found. Here, among these early settlers were many titled personages and some with claims of royal blood. Exciting scenes some of these early settlers

Information



witnessed for Pontiac's braves more than once visited Frenchtown, leaving devastation and sorrow behind, and this also was the scene of the fearful massacre of Winchester and his men in 1812.

From the old stage coach to the modern motor car is a far cry, and yet over this very road a century ago those who wished to travel speedily and with some elegance and comfort took the stage coach which followed the old Indian trails, a merry toot of the tin horn, not unlike some motor sirens of today, notifying each settlement of its arrival.

Today the traveler bowls along in his motor car seeing nothing more startling than a wild duck or mayhap a rabbit that darts across the road. In the days of the stage coach there were buffalo, wild swans, ducks, geese, widgeons, bustards, elk, moose, wolves, bears, lynxes, wildcats, beavers and muskrats, and not a few are the tales of lone travelers who narrowly escaped the packs of howling wolves which followed their trail at night. In those early days the water fowl were so plentiful that an Indian once thus described the scene: "They are so thick that they draw up in line to let the boats pass."

Thus on to Detroit every foot of the way is marked by historic incident, which most any settler can relate. The city of Detroit itself always has been noted for its beauty, even before the white man came, when its very names given by the aborigines who had built a village here indicated its loveliness and charm.

Detroit can boast of a history which antedates any other city in the United States including Boston, New York, Philadelphia and New Orleans, and many of the traces still are to be found of this ancient ancestry.

Detroit avenue, which it is the intention to pave this summer, from Toledo to the historic village of Maumee, is a continuation of the old military road, and this small stretch is all that is necessary to complete the ancient road constructed by the pioneer heroes who laid down their lives that all this rich country might open to their descendants the luxuries which are ours today, through to Defiance, Mad Anthony Wayne's "impregnable fortress," and on to Ft. Wayne, where, after the battle of Fallen Timbers, fought at the foot of the rapids near Maumee, the final treaty in which the rich Maumee valley was ceded to the whites was made. The roads from Maumee on to Ft. Wayne, and indeed all the way to Chicago, are macadamized and in practically perfect condition.

It is not alone the pleasure seekers who will be benefited by this improvement, as the opening up of a good road to Detroit will give Toledo manufacturers of cars an advantage in getting them speedily into Michigan territory.—E. F. Baker.

BETWEEN OMAHA AND KANSAS CITY

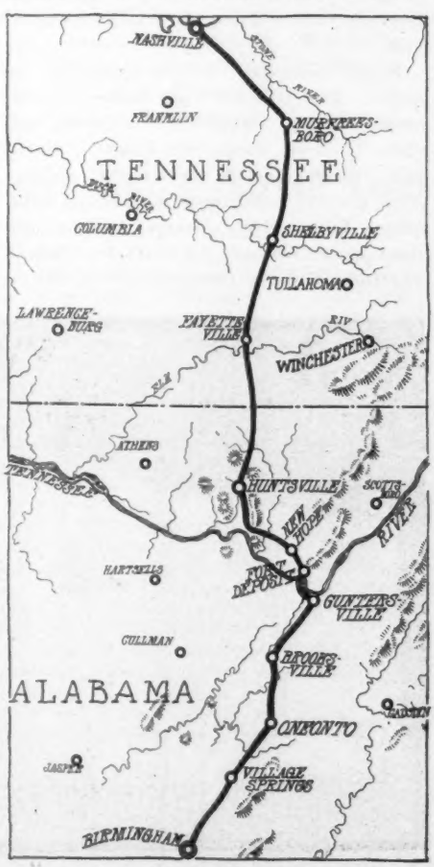
Omaha, Neb.—Editor Motor Age—Through the Routes and Touring information department will Motor Age outline a route from Omaha to Kansas City, Mo.?—P. T. Petersen.

There are several ways to get to Omaha. One lies through Council Bluffs, Glenwood, Tabor, Randolph, Shenandoah, Tarkio, Burlington Junction, Wilcox, Maryville, Savannah, St. Joseph, Halls, Rushville, Atchison, Lovemont, Leavenworth, Lansing, Wallula, Piper and White Church.

Another route is through Millard, Louisville, Waverly, Havelock, Lincoln, Princeton, Cortland, Beatrice, Blue Springs, Marysville, Hiawatha, Everts, Huron, Lancaster, Atchison, Lovemont, Leavenworth and Lansing.

SHORT ILLINOIS ROUTE

Paducah, Ky.—Editor Motor Age—I would like to know the best route from Metropolis, Ill., to Chicago, also where can I get maps showing the best route through Illinois, Indiana and Ohio?—D. F. Raff.



NASHVILLE-BIRMINGHAM ROUTE

From Metropolis motor to Vienna, Marion, Benton, Mt. Vernon, Salem, Odin, Sandoval, Patoka, Shobonier, Vandalia, Ramsey, Oconee, Pana, Assumption, Moqeaqua and Decatur. The roads are very good for that part of the country with the exception of a few places between Metropolis and Mt. Vernon.

The Blue Book, volume 4, contains maps covering the states in the middle west. The best roads are shown and there are running directions, mileage, list of hotels and garages, city maps, etc., in conjunction with them.

DALLAS TO NEW YORK

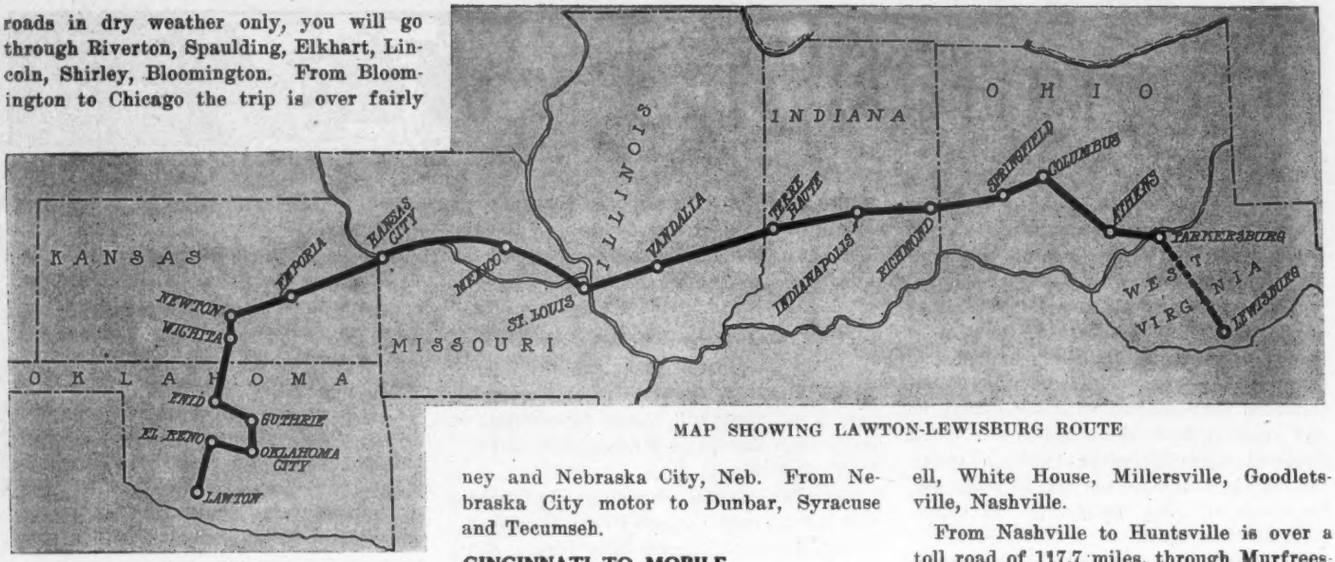
Dallas, Tex.—Editor Motor Age—Through the Route and Touring Information department will Motor Age kindly publish a route from Dallas, Tex., to New York by the way of St. Louis and Chicago, and what is the distance?—A. G. McMillan.

From Dallas motor via Oklahoma City, Wichita and Kansas City to St. Louis, passing through Fort Worth, Saginaw, Rome, Decatur, Sunset, Fruitland, Stoneburg, Terral, Ryan, Hastings, Temple, Lawton, Apache, Anadarko, Chichasha, Pocasett, Minco, El Reno, Yukon, Oklahoma City, Britton, Guthrie, Orlando, Enid, Pond Creek, Medford, Renfrow, Caldwell, South Haven, Wellington, Riverdale, Wichita, Newton, Peabody, Clements, Cottonwood Falls, Emporia, Waverly, Williamsburg, Ottawa, Wellsville, Olathe, Shawnee, Merriam, Kansas City, Independence, Blue Springs, Grain Valley, Oak Grove, Odessa, Mayview Station, Higginsville, Corder, Blackburn, Mt. Leonard, Marshall, Slater, Glasgow, Armstrong, Yates, Higbee, Clarke, Mexico, Martinsburg, Wellsville, Montgomery, New Florence, Jonesburg, Warrenton, Wright, Wentzville, Cottleville, St. Charles, Wellston and St. Louis. This route is not a very direct one, but is recommended because of better roads than are on the airline route from Dallas to St. Louis. This is the Glidden tour route of 1910 from Dallas to Kansas City and from Kansas City to St. Louis the route is that of the Automobile Blue Book. The roads are satisfactory in dry weather, but bad—in fact, impossible—in wet weather.

A route the southern portion of which will be found fairly good in settled weather, but practically impassable in wet weather is that laid out by the Blue Book, and goes through the following towns from East St. Louis: Collinsville, Marysville, Edwardsville, Worden, Staunton, Mt. Olive, Litchfield, Farmsville, Glenarm, Springfield.

Passing on from Springfield towards Bloomington, over fairly good country

roads in dry weather only, you will go through Riverton, Spaulding, Elkhart, Lincoln, Shirley, Bloomington. From Bloomington to Chicago the trip is over fairly



MAP SHOWING LAWTON-LEWISBURG ROUTE

good dirt and prairie roads, the last portion of it into Chicago being over macadam or gravel roads, going through Towanda, Lexington, Chenoa, Pontiac, Cayuga, Dwight, Morris, Minooka, Joliet, Lockport, LaGrange, Chicago. The entire distance totals 335 miles.

Chicago to Buffalo is outlined in the August 24 issue under the caption of Iowa to New York and the balance of the trip is through Bowmansville, Corfu, Batura, Strafford, Leroy, Caledonia, Mumford, Rochester, Mendon, Canandaigua, Geneva, Seneca Falls, Cayuga, Auburn, Sennet, Elbridge, Camillus, Syracuse, Fayetteville, Mycenae, Chittenango, Canastota, Oneida, Vernon, Kirkland, New Hartford, Utica, Herkimer, Little Falls, St. Johnsville, Fort Plain, Fonda, Amsterdam, Cranesville, Schenectady, Lisba Kills and Albany.

Albany to New York lies through Rensselaer, East Greenbush, Schodack Center, Kinderhook, Stuyvesant Falls, Stockville, Hudson, Blue Stores, Upper Red Hook, Red Hook, Rhinebeck, Hyde Park, Poughkeepsie, Wappingers Falls, Hughsonville, Fishkill Landing, Cold Spring, Peekskill, Croton-on-Hudson, Ossining, Tarrytown, Yonkers and Columbus Circle.

HAVANA, ILL., TO TECUMSEH

Bath, Ill.—Editor Motor Age—Through the Routes and Touring Information department will Motor Age tell me the best road from either Havana, Ill., or Beardstown, Ill., to Tecumseh, Neb.? Can I get a road map of same with all the towns passed through?—J. W. Warren.

From Havana motor to Beardstown, Frederick, Pleasant View, Rushville, Ripley, Mt. Sterling, Timewell, Clayton, Camp Point, Paloma, Fowler, Quincy, West Quincy, Taylor, La Grange and Canton to Keokuk, Ia., where you strike the Waubonsie trail and follow up the Des Moines river to Keosaque, thence due west through Bloomfield, Centerville, Plano, Promise City, Corydon, Leon, Davis City, Lamoni, Kellerton, Mount Ayr, Conway, Gravity, New Market, Clarinda, Shenandoah, Sidney and Nebraska City, Neb. From Nebraska City motor to Dunbar, Syracuse and Tecumseh.

CINCINNATI TO MOBILE

Hamilton, O.—Editor Motor Age—Through the Routes and Touring Information department will Motor Age give me the best route from Cincinnati, O., to Mobile, Ala.?—W. B. Charles.

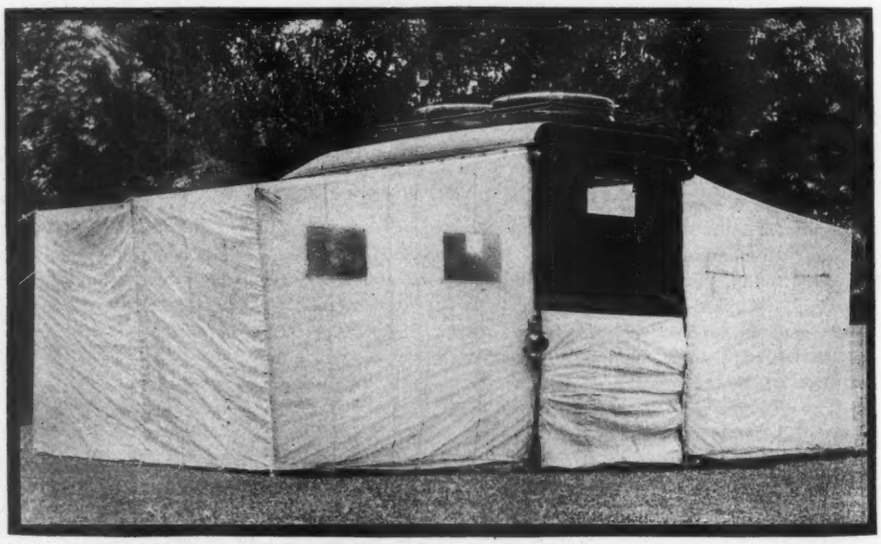
Leaving Cincinnati go to Lexington, 88 miles, over a toll road most of the distance; the Blue Book states precaution must be used in crossing the railroads, as many of them are obstructed from view. The towns passed through are Covington, Ky., Crittenden, Williamstown, Corinth, Georgetown, Lexington. Lexington to Louisville, 177 miles, passes through Versailles, Frankfort, Bridgeport, Graefeusburg, Paytonia, Shelbyville, Simpsonville, Boston, Ford's Fork, Middletown, Louisville.

From Louisville to Nashville is 194 miles. The Glidden tour route of 1910 passes through Buechel, Fern Creek, Ashville, Thixton, Mount Washington, Smithville, High Grove, Bardstown, Ballton, New Haven, Athertonville, Buffalo, Magnolia, Pike View, Canmer, Hardyville, Uno, Bear Wallow, Cave City, Glasgow Junction, Bowling Green, Franklin, Mitchell, White House, Millersville, Goodletsville, Nashville.

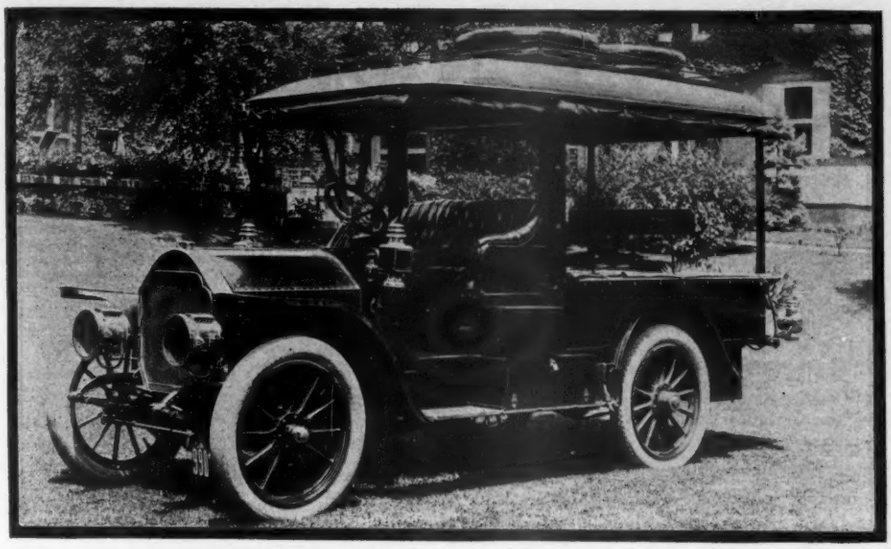
From Nashville to Huntsville is over a toll road of 117.7 miles, through Murfreesboro, Shelbyville, Fayetteville, Tenn., Meridianville, Ala., Huntsville, Ala. From Huntsville go to Birmingham through New Hope, Guntersville, Brooksville, Oneonta, Village Springs, Birmingham.

From Birmingham to Montgomery, according to the Alabama Automobile Association, hit the Columbian road at Eleventh avenue and go over Shady mountain to Monte Valor, thence to Clinton, Verbena, Wetumpka, cross the ferry to Wetumpka and go into Montgomery via the Pickett Springs road. In case there is a rainy spell it would be advisable to inquire at Verbena concerning the roads to Montgomery and motor via Deitsville. Leaving Montgomery with Mobile your objective point, pass through Greenville, Evergreen, Brewton, Flomaton, thence west to Mobile.

Nashville to Huntsville, Ala., is over a fine pike road; the 15 miles from New Hope to Guntersville is not very good, but possible without trouble unless there is a very wet spell. At Deposit ferry cross the Tennessee river. The boat is safe for cars weighing about 4,000 pounds.



COLONEL DU PONT'S MOTORING CAMP



COLONEL DU PONT'S STODDARD EQUIPPED FOR TOURING

but it is somewhat risky for those weighing 5,000 and upwards. You will pass over a small mountain over a good road from Deposit to Guntersville, 6 miles. Between Guntersville and Brooksville you will travel over a valley clay road which is good in dry weather; it is a sandy road from Brooksville to Oneonta but no steep hills; fairly good from Oneonta to Village Springs and 20 miles of pike into Birmingham. The run from Guntersville to Birmingham can be made in 5½ to 6½ hours.

LAWTON TO LEWISBURG, W. VA.

Lawton, Okla.—Editor Motor Age—Please give me a motor car route from Lawton, Okla., to Lewisburg, W. Va.—W. A. Harrah.

The towns to pass through are Rohrer, Apache, Anadarko, Verden, Chickasha, Pocassett, Minco, El Reno, Yukon, Oklahoma City, Britton, Edmond, Guthrie, Mulhall, Orlando, Enid, Kremlin, Pond Creek, Medford, Renfrew, Caldwell, Drury, South Haven, Wellington, Riverdale, Peck, Wichita, Newton, Elbing, Peabody, Florence, Clements, Elmdale, Cottonwood Falls, Elinor, Plymouth, Emporia, Lebo, Waverly, Agricola, Williamsburg, Ransomville, Ottawa, Wellsville, Edgerton, Gardner, Bonita, Olathe, Pleasant View, Lenexa, Shawnee, Merrriam, Rosedale and Kansas City. Crossing the state of Missouri to St. Louis takes you through Independence, Oak Grove, Odessa, Higginsville, Corder, Blackburn, Shackleford, Marshall, Slater, Glasgow, Higbee, Clark, Mexico, Martinsburg, Wellsville, New Florence, Jonesburg, Warrenton, Wentzville and St. Charles.

St. Louis to Indianapolis lies through Collinsville, Highland, Pocahontas, Mulberry, Vandalia, St. Elmo, Altamont, Effingham, Teutpolis, Woodbury, Casey, Marshall, Terre Haute, Seeleyville, Staunton, Brazil, Reels, Manhattan, Mt. Meridian and Plainfield.

The Indianapolis-Columbus leg carries you on to Cumberland, Greenfield, Charlottesville, Ogden, Lewisville, Cambridge City, Centerville, Richmond, Lewisburg, Arlington, Vandalia, Donnelsville, Springfield, Vienna, Somerford and W. Jefferson. It is a nine days' run to Parkersburg through Winchester, Lancaster, Rockbridge, Nelsonville, Athens, Guysville and Little Hocking.

Anything pertaining to road conditions, mileage, running directions, hotels and garages covering the trip this far can be found in the Automobile Blue Book.

The best route Motor Age has been able to find from Parkersburg to Charleston, W. Va., is by way of Pomeroy, O., crossing the river at Parkersburg and continuing to Huntington, W. Va., following the C. and O. railroad into Charleston, covering a distance of 90 miles. From Charleston to Lewisburg Motor Age has been advised that local motorists ship their cars, as it is a hard trip through the mountains. The distance is 100 miles along the Kanawha river to Gauley bridge over fairly good dirt road with very rough stretches; thence along the James river and Kanawha river turnpike, crossing the Gauley mountain, which is about 3 miles to the top and in places very rough and steep. Big Sewell and Little Sewell mountains will have to be crossed, but they are not as long, rough and steep as the Gauley mountain. Should you desire to motor, the above will take you to Lewisburg, but it is not to be recommended.

Delaware Millionaire Using Novel Touring Equipment

COLONEL T. COLEMAN DU PONT, United States senator from Delaware, who recently created a sensation in the motoring world with the announcement of his determination to build a public highway running due north and south through his entire home state, is going ahead with his project with marvelous precision of detail.

Colonel du Pont's purpose is to keep in personal touch with the $1,500,000 project and to this end has accepted delivery of a Stoddard-Dayton camping car built under his own plans, which is possibly the most unique type of motor car construction in existence. With a specially designed body it is so constructed as to enable the colonel to practically live in it for long or short stretches with home comforts of a high order.

The car, a 45-horsepower Stoddard-Dayton, of 115 inches wheel base, with a body specially constructed and so laid out that it has sufficient length inside to accommodate a hair mattress 6 feet long. There are two lockers about 6 inches wide which run the complete length of the body on each side, affording packing space for supplies. The top is permanent, with a slat rack on the under side holding four vulcanized fiber provision boxes which are strapped into place over the rack. There is also a rack in the top for taking care of drawings, plans, etc., and arranged on the top of the body above this is a slat rack with an iron railing of sufficient size to carry four extra tires, which are tightly strapped to the rack.

As to the locker space, there are eight regular boxes on the car for storage purposes. On the inside of the car in the rear there is one which is used for the purpose of carrying cooking materials, such as a stove, etc., and there is one on the rear just ahead of the cooking utensil box where the storage battery and dry cells are carried. There are two long ones on each running board which will be used for the purpose of carrying the tent material, and two iron boxes on top of tent boxes filled with tools. There also are provided on the running boards two especially constructed oil reservoirs for surplus oil.

The tent is one of the most unique features of the entire layout and is made of balloon waterproof silk of very light material for packing in a small space. There are six tent poles, each 6 feet high. When the tent is not in use these poles are carried on a board alongside of the car. The tent is so constructed that there are division curtains hanging from the side of the car to the ground, making practically three compartments, two outside of the car body and one car compartment inside.

A unique feature of the living accommodations is the electric light plant. This is composed of one Edison 150-ampere hour storage battery, which is constantly charged by means of a dynamo driven by the flywheel of the engine, thereby furnishing current for the storage battery.

Storage boxes, within the main body of the car, may be moved when it goes into camp. There are two of these, each of which is upholstered on top to serve as seats. They are clamped to the floor of the car, one being filled with blankets, the other carrying sheet iron trays, three in number, and one sheet metal refrigerator.

Colonel du Pont's gift to the state of Delaware is a highway 103 miles long, from 100 to 200 feet wide, running from one end of the state of Delaware to the other. In building this road he is personally determined to see that it is built right, and he is going to superintend the construction of it himself.

BATTERY VS. MAGNETO

Argument as to Relative Merits of Ignition Current Sources

SAUK CENTER, MINN.—Editor Motor Age—I did not intend to cause a discussion on the relative merits of batteries and magnetos, but only give facts as I have found them, in my article of July 27; but it seems that the magneto friends have got up on their ear and one signing "Friend of the Magneto" in August 17 Motor Age, takes the article quite seriously and says I "hopped" on the "poor old magneto." Now, if one will read my article carefully he will see I did not do the magneto any injustice whatever, only gave my views, and said: "Of course the magneto is satisfactory when it is right, but when it won't start the motor, what are you going to do about it?" This sentence is not a condemnation of the magneto, only a statement of cold facts which anyone familiar with it knows is true. A good magneto costs about $150; with 10 per cent interest added per year plus say $25 for upkeep makes the snug little sum of $190 for the first year of its use. After the first year you may safely deduct $150, cost of magneto. The good storage battery may be had for about $30; with interest at 10 per cent plus five charges at 50 cents each—this on a basis of 5,000 miles' run for the season, 1,000 miles per charge—gives us $5.50 for upkeep, or $35.50 total cost for the first year, less the $30 first cost of the storage battery and you will see the force of my logic in the statement that "what the average motorist wants is a simple ignition," etc., "and not a condemnation of the magneto."

I am really glad to have E. H. Van Patten, of Dayton, Wash., August 17, in Motor Age, come over on my side of the fence, and his really very interesting article proves my logic in the statement made, and under discussion Mr. Van Patten also shows that he is very familiar with the various forms of ignition devices now on the market, and with his scientific arrangement of volt and ammeter clinches the battery fact beyond refutation.

"Friend of the Magneto" says he has "gone through many different makes of magnetos" but fails to find they generate current by reason of friction. I will refer my magneto friend to the Bosch magneto catalog which I have before me, and for the benefit of those who may not understand the matter under consideration will quote from this booklet: "There are certain advantages in providing an engine with a system of ignition having a battery as a source of current in addition to the magneto, however, for this enables the engine to be started at a low cranking speed and, with certain modifications, makes it possible to set the engine in operation by the simple throwing of the switch. An arrangement of this sort makes a special appeal to the woman who drives." I think the Bosch company really knows what it is about, having built and sold about 450,000 magnetos, and are in the front ranks of the magneto industry.

Our figures are correct as regards the price charged for recharging storage, and in the larger cities like Minneapolis we are informed that 25 cents is usually the cost for recharging the storage battery. If the magneto gets its current from the magnets, will not these magnets have to be recharged at some time when their power has waned? Experience proves that they do have to be recharged, or remagnetized, and it is up to Mr. "Magneto Friend" to tell us what the cost of such remagnetizing is; but we think he will have to put the price slightly higher than the 25 cents or 50 cents' storage charge.

Various changes are being made daily in the electrical and mechanical world, and it is for us to discuss the practicability of any and all appliances which are brought to our attention, for our use and well-being. Franklin proved that the air produced electricity by friction and he brought it to the earth with that famous little kite, thereby setting the pace for dynamo, magneto and the storage battery.—A. D. Carpenter.

The Readers

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

RUNNING ON THREE CYLINDERS

Lexington, Miss.—Editor Motor Age—Does Motor Age think it would injure a motor to run it on three cylinders, using the fourth one to inject air into the tires?—Hal A. Gilliam.

If the motor were to run continuously on three cylinders it would be injurious, but the occasional use of one cylinder for tire inflation with the other three furnishing the power, and with no other load, would do no appreciable harm.

FARM CAR INFORMATION

Parkston, S. D.—Editor Motor Age—Will Motor Age please give the details of construction of the system under discussion in the May 25th issue of Motor Age under the heading of "Using the Car on Farm," through the Readers' Clearing House?—F. J. Mueller.

The arrangement of the rollers for taking power from the wheels is illustrated in Fig. 2, which is a view of the testing or running in mechanism at the plant of the Speedwell Motor Car Co. In this installation a means is provided for absorbing and measuring the power on the drums or rollers, but for use on the farm pulleys should be fastened to the roller shafts and any of the machines to be driven belted to the pulleys. The size of the pulleys will depend on the speed of the machine to be driven as compared with that of the roller shaft.

S. A. E. HORSEPOWER RATING

Lansing, Mich.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions:

1—Why does the latest model Franklin have no radius or distance rods? I thought these were necessary to relieve the propellor shaft of any strain.

2—What is the S. A. E. horsepower formula and why is it used in preference to the A. L. A. M. formula in the ratings of new engines? For instance: Stearns-Knight, 4¼ by 5½, is 38.9, and the Columbia-Knight, 4⅞ by 5⅛, is 38.

3—What is the necessary pressure for a Hartford tire, Bailey tread, 33 by 4½, built to fit a 32 by 4 rim?

4—What is meant by the expression that a car "drives through the radius rods of the springs," etc.?

5—What is the usual ratio of the first and second speeds in a three-speed transmission?

6—Would increasing the size of rear wheels give more speed and less power or more speed and more power? To be sure, in all gearings, an increase in the size of the drive gear gives more power, but would increasing the size of the rear wheels be the same as increasing the driven gear on the differential, and if so, to what extent would it be true? In the first part of the question, an equal engine speed is taken for granted.—A. Jenison.

1—The radius rods are left off to give greater flexibility and to get greater ease on the tires. When starting, the springs give more or less and this takes the sudden starting strain off the tires in that it lets a cushion, so to speak, come between the tire doing the work and the work which is moving the body ahead. The same is true in sudden stopping. Greater tire life is claimed because of this.

2—The S. A. E., Society of Automobile Engineers, horsepower formula is the same

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

as the A. L. A. M. When the A. L. A. M. went out of existence it handed all of its data over to the S. A. E., and at that time the name of the horsepower formula was changed to the S. A. E. formula.

3—Eighty pounds' pressure, if the wheel load is 700 pounds; or if it is a rear tire 85 pounds' pressure.

4—A car "drives through the springs" when the rear axle pushes the car ahead through the springs. You understand that the propeller shaft rotates the rear wheels and they tend to go farward on the road surface. But this movement must be transmitted to the frame of the car, and you can do this through the springs or through radius rods or through a torque tube.

5—The ratio on low is generally fourteen to one or thereabouts. On intermediate, eight to one is a popular ratio. In such cases the ratio on direct drive is frequently three to one, two and one-half to one, or three and one-half to one.

6—Increasing the wheel diameter will lessen the power. To explain: When you increase a wheel diameter from 34 to 36 inches you require the motor to do more work for each crankshaft revolution. A wheel 34 inches in diameter covers approximately 107 inches of roadway in each revolution, whereas a 36-inch wheel travels over 113 inches of roadway each revolution. It takes power to send the car over those additional 6 inches, so that for each revolution of the rear wheel with a 36-inch tire, there is more work done than with a 34-inch size. If you use larger diameter rear wheels then you should gear down more; for example, if you have 34x4-inch tires with a three-to-one ratio, you should use three and one-half to one with a 36x5-inch tire size.

Do not confuse increasing the rear wheel diameter with increasing the diameter of the bevel gear on the differential. You increase the size of the bevel to get more power, but you decrease the tire size to get more power, where your driving ratio remains unchanged.

PERHAPS MAGNETO TROUBLE

Grafton, Neb.—Editor Motor Age—I have a Remy magneto which has been run about 2½ years. It is missing and skipping one-half or two-thirds of the time. I should like to know what the trouble is.—D. S.

It would not be right to say that your trouble is magneto trouble, it may be one of a dozen different things. Your carbureter may not be right. In the ignition field there may be something wrong with the wiring, your spark plugs may be at fault, the trouble may be with the coil, etc.

Supposing it is magneto trouble and you have taken special precaution to inspect the other parts which might give trouble, then we would suggest your examining the platinum points on the breaker mechanism. After constant use these points wear and when they wear there is less surface of one to contact with the other, and there is not as good an opportunity for good closing of the circuit. The remedy is securing new platinum points from the Remy company. These can be secured from the Kansas City or Chicago branches.

MITCHELL Q-D TIRE RIM

Delphos, O.—Editor Motor Age—I have just purchased a 1912 Mitchell model T with quick-detachable clincher tires. What tools will be necessary to the taking on and off of this type tires? I see a great number of different tools listed in the accessory catalogs, but am at a loss to know which ones are really necessary. —Chas. C. Kitts.

The Q. D. rim used on the Mitchell model T for 1912 is the standard Universal, and the only tools necessary for operating this rim are a good screw driver and a hammer or monkey wrench.

TOO MUCH OIL IN OVERLAND

Ladora, Ia.—Editor Motor Age—I have been running a model 41 Overland car since March, 1910. The last month it seems to be getting too much lubricating oil into the cylinders, for it gives off a light smoke almost all the time the motor is running. As far as I can see, there is no way to regulate this, and I wondered if Motor Age could tell me what the probable trouble is.—H. C. Gates.

The apparent trouble is that you have too much oil in the crankcase. There is an oil gauge on the side of the motor and on this gauge is a mark opposite which the indicator should stand when the proper quantity of oil is in the case. Quite a few owners of this model keep the indicator about ¼ inch below the point marked on the gauge. A good rule for lubrication on this model is to have enough oil in the case so that a very light cloud of blue smoke will show behind the car when you start out.

FAVORS DATING TIRES

Hoosier Likes Minnesota Law and Discusses Rubber Proposition

Elwood, Ind.—Editor Motor Age—As a constant reader of your valuable weekly and a working man owning a motor car, I deem it my duty, in justice to all motorists and myself, to make a few statements through the columns of Motor Age in regard to the article on page 11, issue August 3, on the new Minnesota law requiring the year of manufacture of tires being placed in raised letters on the outside of the casings.

To begin with, the tire proposition is one of the greatest grafts with which we have to contend. Any motorist, like myself, in moderate circumstances finds himself confronted with a dreaded nightmare when he is obliged to maintain his tire expense. It is safe to say that 90 per cent of the upkeep of a touring car is the tires. Car manufacturers in the last few years have made wonderful strides in the improvement of the weight and mechanical features of their product. Motors are now compact, light and quiet, and have such perfect oiling systems that one does not have the oil, fuel and repair bills he used to have. A motorist gets much more satisfaction from his machine in a mechanical sense than he has in the past, but he is still up against a constant dread, tire trouble.

While car manufacturers have been making improvements and cut prices, tire manufacturers appear to be after the quantity of their product rather than quality, and yet maintain their exorbitant prices. Instead of trying to increase the strength and wearing qualities of their tires so that the consumer may get more service, they apparently are using cheaper material and old rubber, for the demand for junk rubber is greater than it used to be and eventually finds its way back to a new tire.

With the rapid improvement of roads the per cent of tire blowouts should be much less than they are, for one did not encounter the tire trouble 5 years ago that one does today. Again, we find an unlimited number of tire-saving devices on the market, which goes to show that people are awake to the fact that tires, no matter how strongly guaranteed, are uncertain. If an innerliner adds life and strength to a casing, why does the manufacturer not build his tires that much stronger?

Looking over a tire schedule we find a vast difference in the price of guaranteed and non-guaranteed tires. Yet with the large premium that the consumer pays for his guarantee, it invariably amounts to nothing, since every tire agency escapes an honest adjustment through small technicalities. Any motorist who has ever tried to make an adjustment knows that the manufacturer always finds some

way of placing the trouble on the consumer and proving to their own satisfaction that he and not the tire is at fault.

The article referred to says, in part: "The Motor and Accessories Manufacturers' Association has determined to fight the drastic measure, and it is declared that if the law is declared unconstitutional that tire makers will refuse to ship tires into the Gopher state in the future."

We, as American citizens, are in a serious plight and at the mercy of the tire makers if we must take their stale stock or be cut off from the supply. Such action, if accomplished, should be intercepted by federal authorities. Now, if the tire makers have honest convictions as to the age and quality of their product, why should they care for such a law? The law can only be deemed a sample of honest legislation in the interest of the consumer. It does not restrict the price of tires, or the material used, but tends to insure the purchaser of not paying for a new tire and receiving an old shop-worn one. This is an important factor, since rubber deteriorates very quickly. In larger cities one is more apt to get new stocks, but in small towns it is safe to say the stock is generally old, and not in first class condition.

Let us suppose that one of these same tire makers should be confronted with the proposition of buying some eggs at a local grocery. It is reason to believe that he would demand strictly fresh product, yet he would feel rather angered if the grocer told him he must take his stale eggs or do without. Now eggs have nothing to do with tires, yet it only goes to prove that what is good for the servant should be good for the master.

As motorists with their constant demand for tires only wish a good quality of fresh tires that can be depended upon, therefore let me solicit the aid of Motor Age and numerous motorists throughout the country in proclaiming the new Minnesota law an honest and fair piece of legislation. I would like to hear the opinions of other motorists on this subject through these columns.—H. S. B.

FLEXIBLE PROPELLER SHAFT

Oklahoma City, Okla.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following question: Would not a flexible driving shaft, if made of a long coil spring or other material of like nature, deliver the same power from the engine to the rear axle that a chain-drive does, and would it not in general relieve much of the sudden jars?—Reader.

Your query suggests the flexible propeller shaft that was tried out in Europe 3 or 4 years ago and was discarded. One or two motor car companies in America took it up but never brought out a model with it. The flexible coupling in the propeller shaft consisted of one or a series of springs between the opposing ends of the divided propeller shaft. Often each end of the divided shaft carried a three-arm spider between which spiders the springs were placed. It is true much of the jar of starting was taken up by these springs but the result obtained was not worth the effort expended. When the spring gets compressed to its limit the flexible element has disappeared. The tension of the spring varies greatly. In your case, having a shaft made up of a tightly wound spring would not be satisfactory. It would require several rotations of the motor before the drive would be transmitted to the axle. When stopping, the spring would have to relax, and to do this it would either have to drive the car forward or tend to back up on the motor.

MONOBLOC MOTOR COOLING

Kimmelton, Pa.—Editor Motor Age—Would Motor Age please answer the following questions:

1—Would an en bloc motor heat quicker than one cast in pairs?

2—What is the best record run made by a motor cycle?

3—What is the voltage on a Splitdorf coil?

4—What is the daily output of the Schacht Motor Car Co.?

5—What is the meaning of A. L. A. M.? —Reader.

1—An enbloc or monobloc motor will not heat quicker than a motor with the cylinders cast in pairs. Heating in a motor depends on waterjacket design, radiator capacity, water circulation, together with carburation, lubrication and ignition. A single-cylinder motor may heat worse than a six-cylinder one in which the cylinders were cast in one block.

2—We have not the information.

3—This will be answered later.

4—We do not know.

5—The four letters A. L. A. M. are initials of the name Association Licensed Automobile Manufacturers. This was the concern that owned the Selden patent but which, after the adverse decision on last January, went out of existence.

THREE CARBURETER PRINCIPLES

Milwaukee, Wis.—Editor Motor Age—Will you explain in the Readers' Clearing House what is the exact problem in a carbureter that makers try to solve when they use the auxiliary air valve or the concentric spraying nozzle or the lifting needle valve?—C. G. S.

The problem you ask about is the big problem of carburetion, namely, maintaining a proper mixture of air and gasoline vapor for all motor speeds. As you know in the majority of carbureters the gasoline will not flow out unless there is a sucking force set up by the motor, the same as when a person drinks a glass of lemonade through a straw or tube in a drug store at the soda fountain. The straw or tube is the nozzle of the carbureter, with this difference, that when the motor is at rest the gasoline rises to within $\frac{1}{16}$ inch or thereabouts of the top of the tube so that the sucking force to draw the gasoline out is much less than in the case of the straw in the glass.

The tendency in the spraying nozzle is

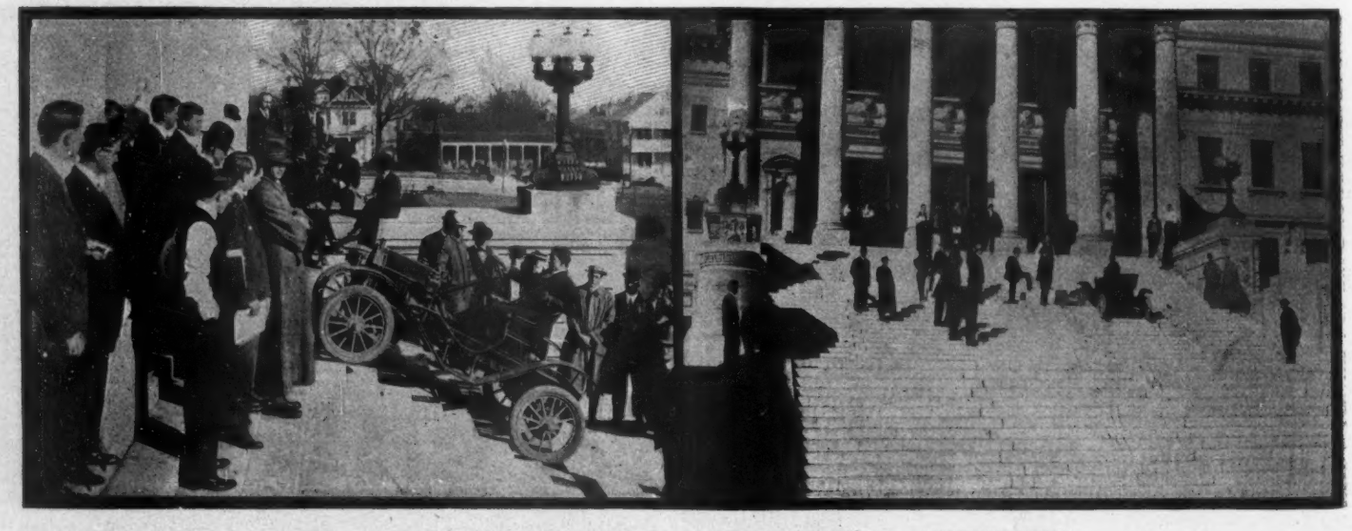


FIG. 1—BRUSH RUNABOUT CLIMBS CAPITOL STEPS AT JACKSON, MISS.

when the motor speeds up to suck up too much gasoline and not enough air, thereby giving too rich a mixture. To avoid this different means have been adopted to supply more air, a favorite one being the auxiliary air valve which is controlled by a spring and is set to open with a certain motor suction or pull. As soon as more air is let in the pull on the gasoline in the nozzle is reduced and consequently a weaker mixture is obtained. Some carbureter makers in order to get a very sensitive auxiliary valve action use two springs of different diameters, one of which opens before the other, so that there is a progressional opening of the valve. Makers who do not use the two springs often use a cone-shaped spring, one end with smaller-diameter coils than the other end. The larger-diameter coils compress first, the smaller-diameter coils afterwards, and so a progressional action is obtained.

One foreign carbureter maker, White & Poppe, of Coventry, Eng., has aimed at accomplishing the admission of extra air by varying the diameter of the annular air space around the nozzle and not using an auxiliary air valve. This change in the diameter of the venturi tube, for such it really is, is accomplished by having the upper part of the venturi in the form of a sliding cone with a vertical movement so that as the cone is lifted the available air opening is increased. This cone is interconnected with the throttle so that as the throttle is opened there is a proportional opening of the venturi. This arrangement avoids the use of springs of any nature.

Not a few makers have aimed at solving this problem of correct proportion of air and gasoline in still another way, namely, by the multiple-jet nozzle. In some instances this jet has a score or more of very small holes through which the gasoline escapes. These holes are not opened at once, but are progressively uncovered by the throttle. On low speeds perhaps but a single hole is uncovered, but its capacity is sufficient for the motor at that rate of speed. As the throttle is opened a little wider more holes are uncovered until the utmost capacity of the carbureter is reached. The proportion of the air opening with the gasoline opening is so arranged that the mixture is that desired. Frequently adjustments are furnished whereby the proportion of air and gasoline can be varied to suit the requirements of different motors.

One feature in the carbureter problem that must not be overlooked is the fact that with high motor speeds a mixture should be weaker than at low speeds. The reason is at hand. With a rich mixture the combustion is slower; in a word, it takes the flame longer to travel from the tip of the plug to the other parts of the combustion chamber. When a motor is running at high speed there is less time for this flame propagation than at slower speeds. There is a remedy in advancing the spark, but this will not entirely care for the troubles and the problem falls back on the carbureter maker, who is expected to meet every requirement.

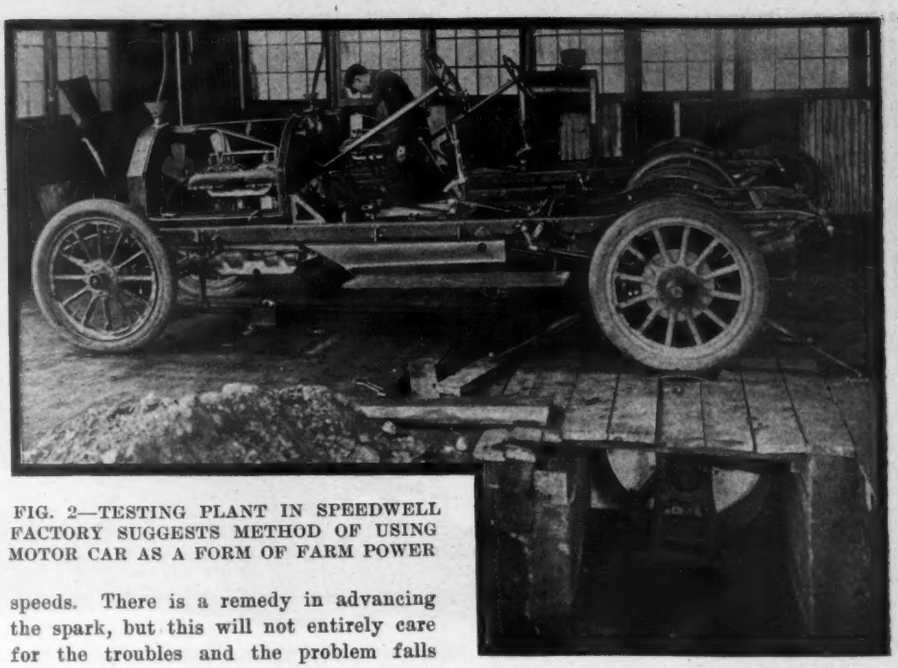


FIG. 2—TESTING PLANT IN SPEEDWELL FACTORY SUGGESTS METHOD OF USING MOTOR CAR AS A FORM OF FARM POWER

It is customary with not a few carbureter makers to insert in the top of the spraying nozzle a needle valve pointed like the end of a sharpened lead pencil. The further this valve extends into the nozzle the less gasoline can come out. The valve taper is properly proportioned so that as the valve is lifted with the opening of the throttle there is a mixture of desired richness obtained.

BRUSH CLIMBS STEPS

Jackson, Miss.—Editor Motor Age—I am enclosing herewith a couple of photographs, Fig. 1, showing the Brush runabout climbing the steps of the capitol building in this city. The total number of steps is fifty-two.—W. D. Brunn.

TOO BIG LICENSE TAGS

Peoria, Ill.—Editor Motor Age—I want to lodge my protest against the new Illinois state license tags which we are compelled to carry on the front and rear of our cars in this state. The old tag used until July 1 had a 4-inch letter, but the new law calls for a 6-inch letter, and, worse still, you are compelled to use the tag furnished and are not allowed to have the number painted on the car body—worse still, the number must be rigidly attached and be 20 inches from the ground. With many cars this becomes more or less of a hardship. It means that the number plate must be carried on the radiator on several machines. At present the majority are carried by a bracket from the filler pipe. This is a bad place because it cuts out the wind from the radiator at the point where the hot water from the jackets is emptied into it. A much better place would be at the base or the radiator where the water is cooled and where the cutting out of the wind will not be such an important factor.

There are plenty of car owners who have been puzzled at the way their motors have heated up in the last few weeks of hot weather and in a few cases, that I know about, this has been due solely to the large tag in front of the radiator. If the tag must be carried in front of the car and 20 inches from the ground, one of the best places for it would be on the top of the fender at the right or left side. Not a few makers are mounting a bracket on the left rear fender for the tag and it seems to me this scheme could be followed out on the front also.

I would like to hear what other readers of Motor Age think about this problem.—Radiator.

OVERSIZE TIRE SIZES

Heavener, Okla.—Editor Motor Age—Will Motor Age please answer the following questions through the Clearing House columns?

1—Will a 36 by 5-inch tire fit a 34 by 3½-inch wheel?

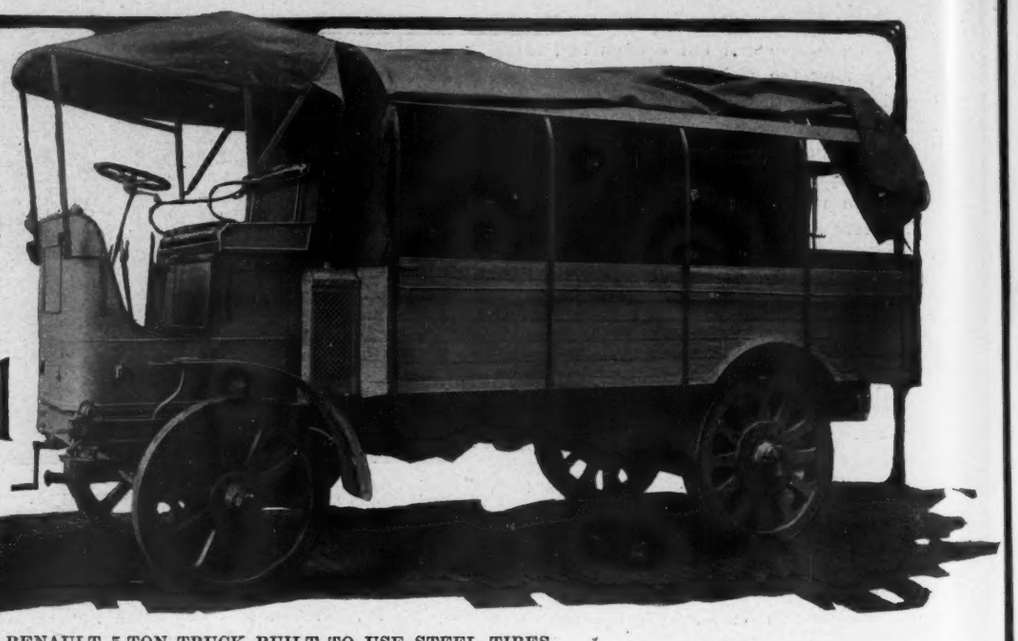
2—Will a 35 by 4-inch tire fit a 34 by 3½-inch wheel?—Subscriber.

1—With several of the tire companies the oversize tires are 1 inch larger in wheel diameter and ½ inch larger in tube diameter. To explain: A rim carrying a 36 by 5-inch tire will take a 37 by 5.5-inch oversize. This is obtained by adding 1 inch to the 36 and ½ inch to the 5. The following tabulation shows some oversize sizes:

Standard Size	Oversize
28 by 3	29 by 3.5
30 by 3	31 by 3.5
30 by 3.5	31 by 4
32 by 3	33 by 3.5
32 by 3.5	33 by 4
32 by 4	33 by 4.5
34 by 3.5	35 by 4
34 by 4	35 by 4.5
36 by 3.5	37 by 4
36 by 4	37 by 4.5
36 by 4.5	37 by 5
36 by 5	37 by 5.5

This tabulation answers your questions. All of the tire makers at the present time do not make a full line of oversizes for all of the standard sizes, but the majority of them do. The largest oversize we know of is that for 42 by 4.5-inch tires.

New Designs in Foreign Commercial Cars



RENAULT 5-TON TRUCK BUILT TO USE STEEL TIRES

RENAULT STEEL-TIRED TRUCK

WITH a view to economic upkeep, French car manufacturers are devoting a large amount of attention to the development of big-capacity trucks running on steel tires. They are encouraged in this direction by the army authorities who subsidize commercial vehicles and give a preference to 3 and 5-ton trucks without rubber-shod wheels. At present expert opinion is divided as to the economic advantages of steel shod trucks. While rubber is an expensive item, its supporters maintain that its use is imperative if a reasonable life is to be obtained for the mechanical organs. Others are of the opinion that it is possible to build a truck with steel tires in such a way that the machinery will not be prepared for the scrap heap at the end of 6 months.

Some European Ideas

Among these latter is Renault, who, after private tests extending over a period of 2 years has produced a 3-ton truck fitted with steel tires and having the motor either under the seat or below a bonnet. A 5-ton model is also being prepared with steel tires and motor under a bonnet. Both types will take part in the forthcoming French army trials and both are so well developed that the company recommends them to users in preference to the rubber shod variety.

The 3-ton truck with motor under seat has its power plant carried on a subframe, which frame differs from those usually employed by reason of the spring attachment to the main members. The main frame has four hangers and coil springs on which the subframe carrying the motor is mounted. This arrangement gives a separate suspension for the motor independent of the main springs and saves it from the shock and vibrations which are inevitable with steel tires. The spring mounting of the motor necessitates flexible connections to the gearbox. The propeller shaft, uniting the clutch and gearset, has two universal joints and the control mechanism for the clutch, foot brake and change speed lever are all external.

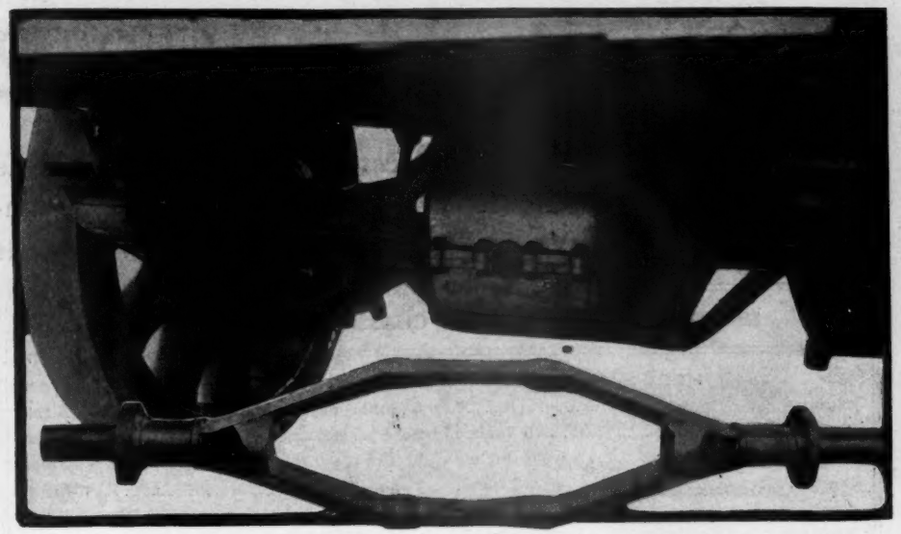
In accordance with Renault design, the motor has its cylinders in pairs, with valves on one side and thermo-syphon water circulation. The bore of the cylinders is 3½ inches, the stroke 5½ inches. A governor limits the motor speed to 1100 revolutions a minute.

The carbureter differs a little from the standard product by being designed to run on alcohol, benzol or gasoline without any change. For this purpose it is specially heated from the exhaust. In the military trials the three fuels are imposed.

The radiator is carried behind the motor even when this latter is under the driver's seat. The position is one affording great protection, and although very few tubes are exposed there is not any tendency to overheat under adverse conditions with a supply of 13 gallons of water. The gasoline tank is built in the dash, with a gravity flow to the carbureter. Motor control is by means of accelerator pedal with fixed ignition point and minimum throttle setting by lever under the steering wheel, as on the firm's touring cars.

Except that the gearbox has four instead of three speeds, its design is entirely standard. Final drive is by propeller shaft, this having been decided upon after comparative tests with both chain and shaft-driven trucks. The rear axle is the Renault patent one-piece forged type—see illustration—differing in proportions, but similar in design to that employed on the firm's touring cars. The center forms a cradle within which the differential housing is mounted, and the two arms are bored out to receive the driving shaft.

The method in which the reduction between the motor and the driving wheels is obtained is also distinctive, and will be understood by examination of the diagram. Fig. 1—Here the driving propeller shaft is represented by A B, one of the three differentials, satellites or bevels is shown by C, and the drive is taken from pinions D and D1 and bevels R and R1 respectively to the reducing gear E1, F and E, F1, the pinions F and F1 meshing with gears G and G1 on the two shafts carrying the power to the road wheels. The housing is made up of an upper and lower case bolted together at each end and having



REAR AXLE RENAULT 5-TON TRUCK AND AXLE FORGING

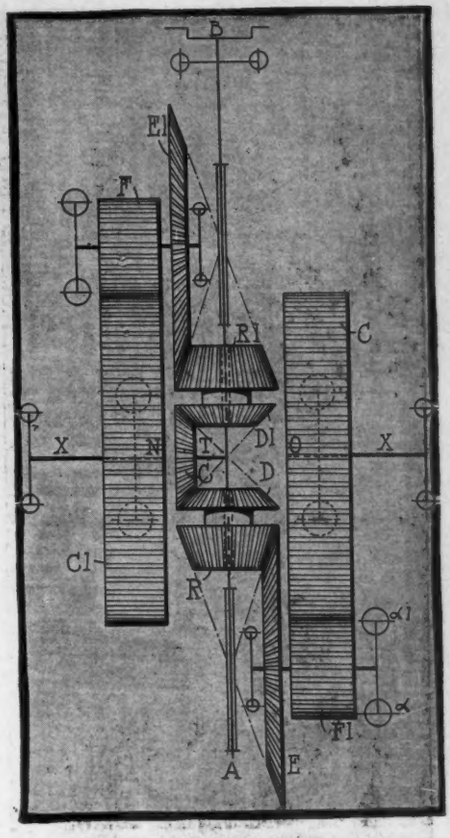


FIG. 1—RENAULT GEAR REDUCTION

separate steel side plates bolted to the case.

This design gives an elongated shallow box for the differential housing with the possibility of obtaining a high road clearance, the lowest point of the model under review being 15 inches from the ground.

Two triangular torque tubes, one at each side of the differential housing, are employed, and in addition radius rods are carried from the rear axle to a point under the center of the frame members.

Wood wheels have been fitted in preference to all-metal ones on account of the extra life they give to the mechanism.

COMBINED PUMP-SPRINKLER

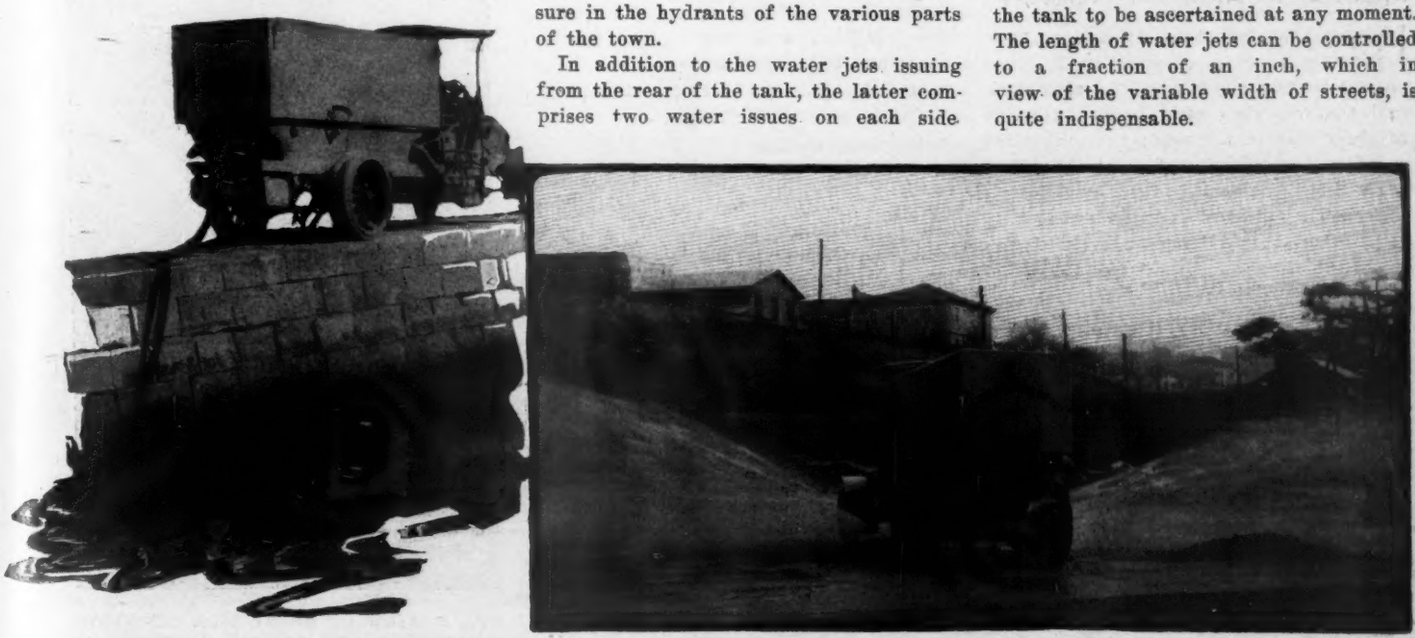
The city of Trieste recently ordered from Messrs. Stoewer of Stettin a motor sprinkling car of a novel design, namely, a large tank car, the water jets from which suffice for sprinkling even the broadest streets of a city throughout their width.

The car is fitted with a four-cylinder, 40-horse power motor. The driver's seat accommodates two men, the driver and a man controlling the sprinkling mechanism. The motor driving the car also operates a suction-and-pressure pump, which serves a double purpose. Apart from reinforcing the pressure in the sprinkling water tank, it allows sea-water to be drawn in through a big line of hose for replenishing the tank. This is an obvious advantage for a city situated on the sea, the tank being refilled at a moment's notice whenever the car happens to be on the shore. The refilling tube located at the rear part of the tank is so calculated as to allow the tank, of 1,325 gallons capacity, to be filled in not more than 4 minutes. Beside this water entrance there is another tube connection serving to fill the tank from the hydrants of the city water supply. In the latter case the filling process is of course much slower, the time required, 10 minutes as an average, being bound to vary in accordance with the variable water pressure in the hydrants of the various parts of the town.

In addition to the water jets issuing from the rear of the tank, the latter comprises two water issues on each side. These lateral water jets are readily inspected from the driver's seat and accordingly can be stopped by the driver as soon as an obstacle is encountered in sprinkling the street.

The sprinkling car with its full load of water travels at a speed of 9½ miles per hour, covering even the broadest streets in a minimum of time with a spray of water.

The man controlling the sprinkler has in front of him a water gauge, allowing the actual amount of sprinkling water in the tank to be ascertained at any moment. The length of water jets can be controlled to a fraction of an inch, which in view of the variable width of streets, is quite indispensable.



THE COMBINED SPRINKLER AND PUMP TAKING ON WATER AND AT WORK

Haynes Line for 1912

Two Chassis Models for Next Year—Model 21 a New One—Model Y Continued from 1911—Both Have Four Cylinder T-Head Motor and Band Clutch—Enclosed Tappets

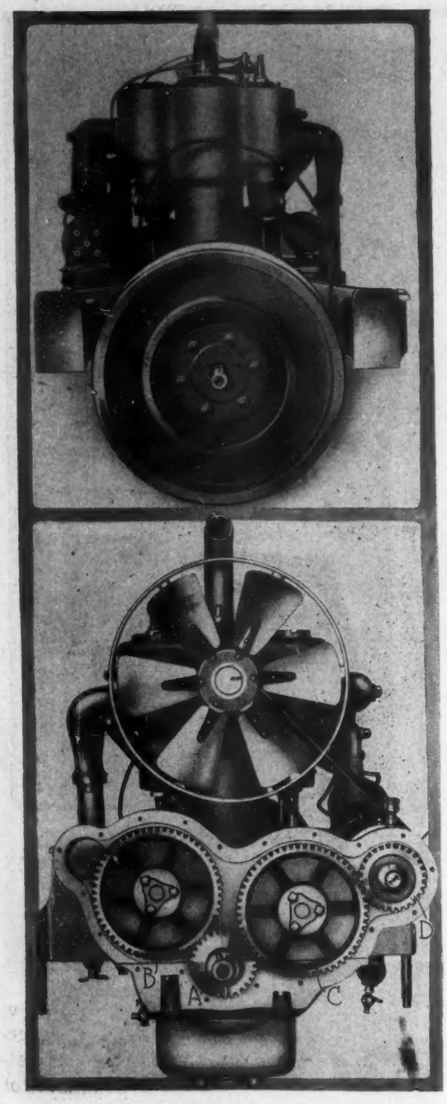


FIG. 1—TWO END VIEWS OF HAYNES MOTOR FOR 1911. UPPER VIEW IS FROM THE REAR. LOWER VIEW IS FROM THE FRONT WITH TIMING GEAR HOUSING REMOVED TO SHOW ARRANGEMENT

SPECIFICATIONS OF HAYNES CHASSIS MODELS FOR 1912

MODEL Y		MODEL 21	
Number of cylinders	4	Number of cylinders	4
Bore	5 inches	Bore	4½ inches
Stroke	5½ inches	Stroke	5½ inches
Type	T-head	Type	T-head
Cast	In pairs	Cast	In pairs
Ignition	Bosch dual	Ignition	Bosch dual
Lubrication	Splash and force feed	Lubrication	Splash and force feed
Wheelbase	125 inches	Wheelbase	120 inches
Tires	37 by 4½ inches	Tires	36 by 4 inches
Rear axle	Floating	Rear axle	Floating
Front springs	Semi-elliptic	Front springs	Semi-elliptic
Rear springs	Three-quarter elliptic	Rear springs	Three-quarter elliptic

IN the eighteenth year of Haynes manufacture there is offered for 1912 two chassis models embodying the same general features that have been distinctive of these cars in the past; the unit plant supported on four points and consisting of a T-head motor of four cylinders, a conventional gearset and the contracting band clutch. One chassis is called the model 21 and the other the model Y.

The model Y remains the same for 1912 as for this year, the only changes being in the line of refinements of outline which go to improve the appearance.

Model 21 Is New

The model 21 is not greatly unlike its 1911 predecessor, the model 20, but is larger in every way, a more powerful motor, a longer car with greater wheelbase and larger wheels. A more rakish cast is given the car by dropping the radiator 3 inches on the sugframe and hanging the body low.

The general construction of both chassis is practically the same, but the larger and heavier motor of the model Y requires heavier construction throughout. The motor of the model 21 has four cylinders of 4½-inch bore and 5½-inch stroke, giving it an S. A. E. rating of 32.4 horsepower. The cylinders are cast in pairs and are of the T type, with the intake valves on the right and the exhaust valves on the left side of the cylinder heads. The valves are 2¼ inches in diameter and have a lift of 5/16 inch. Pushrods and valve springs are completely housed to prevent noise. This arrangement is illustrated in Fig. 2, in which C indicates the plate covering the housing of the valve springs and which is easily removable for adjustment of the pushrods as indicated at A. The pistons are equipped with four rings ¼ inch apart and each ¼ inch in diameter. Fuel is fed by gravity to the carbureter on the right side of the motor.

Lubricating System

Lubrication of the motor is assured by means of a force feed and splash system. The aluminum crankcase is divided into two compartments by a partition, one compartment being immediately beneath the other, so that the lower part of the case is used as an oil reservoir. The upper half carrys the pools of oil into which the ends of the connecting rods dip. From the lower half of the crankcase the oil is forced by an automatic pump to the upper half of the crankcase, where it is held in the sumps at a certain level maintained by allowing the oil to overflow into the lower crankcase when it exceeds a certain height. That which overflows drains back into the reservoir. Tubular blades on the ends of the connecting rods dip up the oil and splash it into the cylinder walls and into grooves which lead it into the bearings. A sight feed on the dash indicates the quantity of lubricant in the system.

The cooling system comprises a centrifugal pump C, Fig. 4, a Fedders cellular type radiator and a fan. The latter is driven from the layshaft D, Fig. 1, while the pump is connected directly to it. The ignition system is a dual one, consisting of a Bosch magneto and a battery. The magneto is driven by the layshaft and is

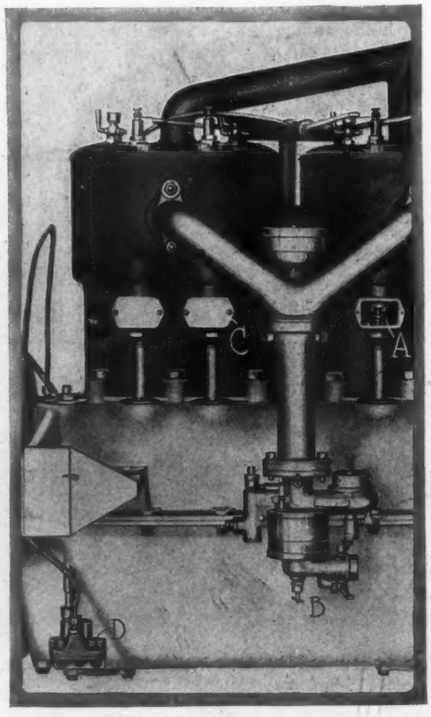


FIG. 2—VIEW OF RIGHT SIDE OF MOTOR SHOWING VALVE LIFTER COVERED AT C AND OPEN FOR ADJUSTMENTS AT A

located on the left side of the motor immediately behind the pump, as shown in Fig. 4.

The timing gears are completely incased with the aluminum housing shown in Fig. 5. A view of the gears with the case removed is offered in Fig. 1, in which A is the driving gear on the crankshaft, B is the camshaft gear for the inlet valves and C is on the camshaft which operates the exhaust valves and acts as the intermediate between the layshaft gear D and the driver A.

The motor is suspended at four points. The two rear points of suspension are pivoted to the frame and the two forward points are set upon spiral springs on seats suspended from the frame. The four-point suspension, holding the motor rigidly in the frame, is believed to eliminate vibration of the motor to a great extent, while it is thought the twisting action is taken up by the springs under the forward points of support.

The Band Clutch

The arrangement of the rest of the power plant—that is, the gearset and the clutch—is illustrated in Fig. 3. The three-speed gearset is suspended from the base of the motor by two large aluminum arms E, whose faces F attach to the lugs on the motor base. One of these lugs is shown at the left of the flywheel in Fig. 4. In the arch formed by the arms is the contracting band clutch B, Fig. 3, making the power plant a unit.

The contracting band clutch is one of the features of Haynes construction, and has been distinctive of these cars since they were first built. It consists of a steel band encircling a bronze drum, the latter bolted to the flywheel of the motor, while the steel band is attached by keys to the transmission shaft. This is shown in detail in Fig. 3. When engaged the steel band is contracted about the drum and turns with it. The springiness of the steel band alone is not relied upon to engage it with sufficient force, but there is also provided a wedge-shaped slipper head tapered only on one side. This throws a lever one way to engage and another way to release and is positive in its action, causing the band to expand enough to prevent it dragging upon the drum and to contract with sufficient force to transmit the power.

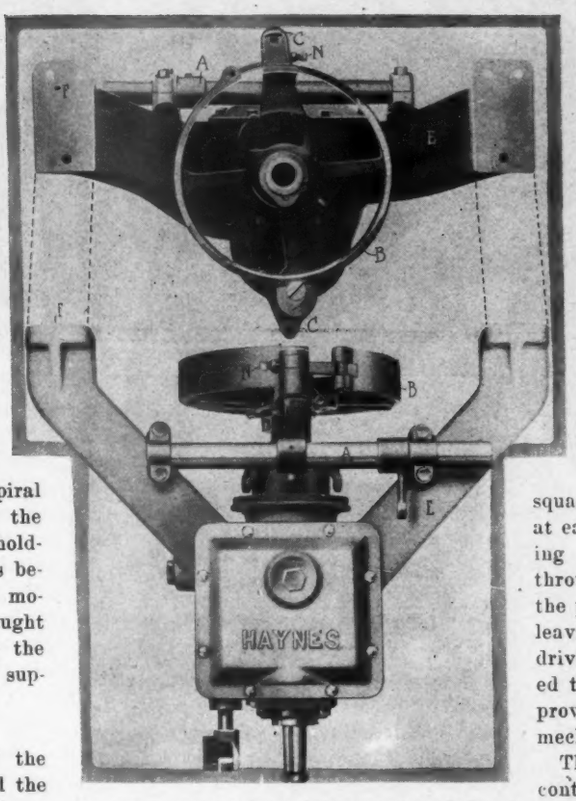


FIG. 3—END AND TOP VIEW OF HAYNES GEARSET AND CONTRACTING BAND CLUTCH B WITH SUPPORTING ARMS E WHICH ARE BOLTED TO ENGINE BASE

The Rear Axle

The transmission of power from the gearset to the rear axle is through a nickel-steel propeller shaft with square ends which fit into a universal joint at each end. The rear axle is of the floating type, with Timkin roller bearings throughout. The entire load is carried on the pressed steel housing of the rear axle, leaving the axle shafts only the strain of driving the car. A removable plate bolted to the center of the rear axle housing provides admission to the differential mechanism.

The service brakes are external and contract upon a drum 14 inches in diameter with 2½ inches face. They are operated by a disappearing foot pedal and are lined with raybestos. The emergency brakes are internal and expand upon the same drum. The brakes are equipped with heavy spiral springs which connect the bands, keeping them in adjustment and tending to eliminate the rattle.

The frame is of cold rolled pressed steel with a 2-inch drop and a 3-inch offset, with steel reinforcements and steel

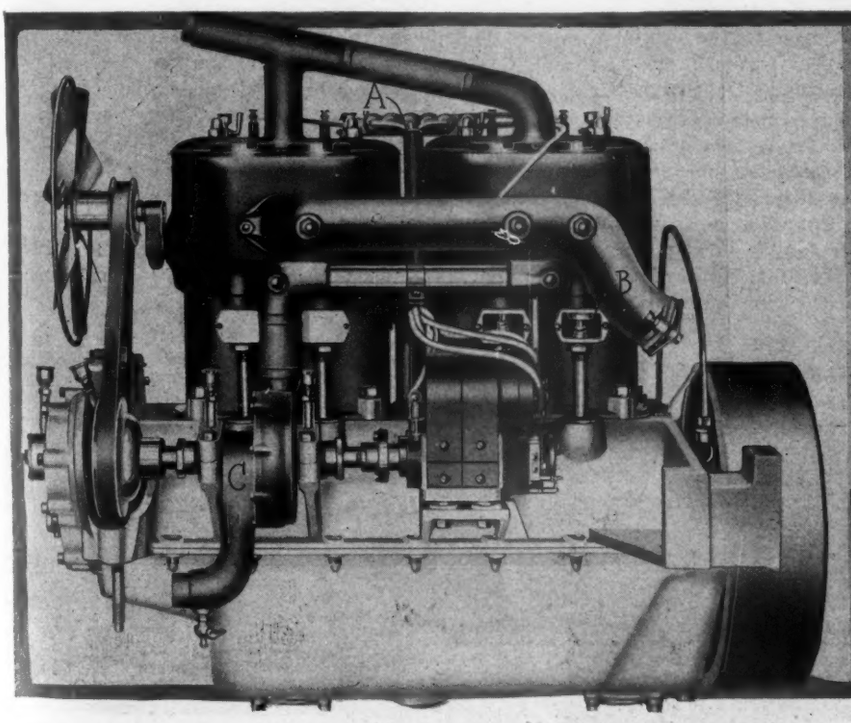


FIG. 4—LEFT SIDE OF MOTOR SHOWING WATER PUMP C AND METHOD OF SUPPORT OF HIGH-TENSION WIRES AT A

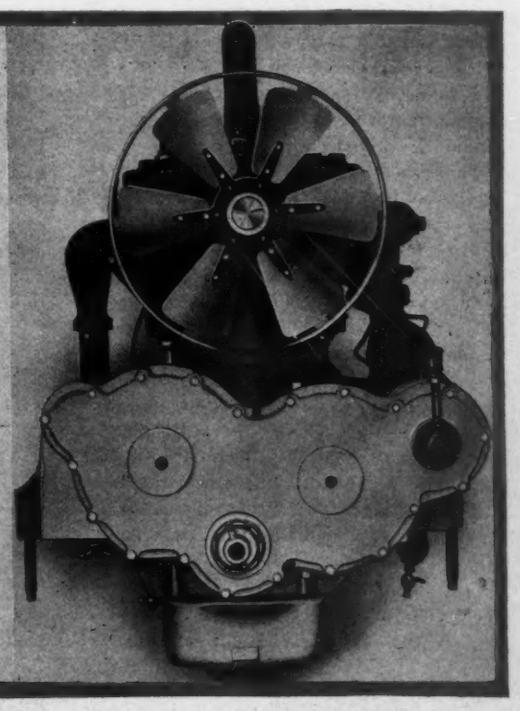


FIG. 5—THE FRONT OF THE HAYNES FOUR-CYLINDER MOTOR FOR 1912

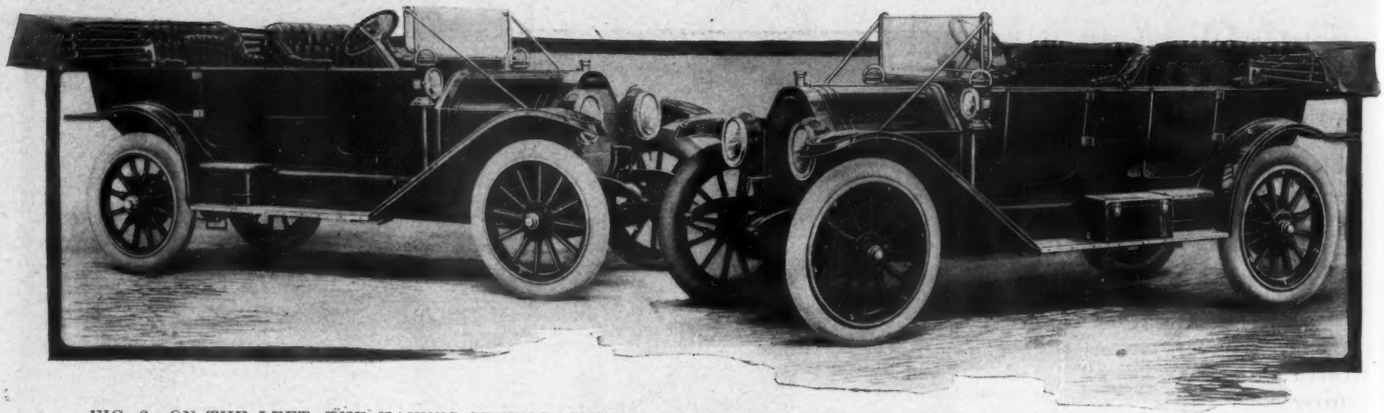


FIG. 6—ON THE LEFT, THE HAYNES SEVEN-PASSENGER TOURING CAR AND ON THE RIGHT THE FIVE-PASSENGER CAR

hangers. An I-beam type of front axle is used and is 2 inches in depth. It is drop forged and equipped with roller bearings in the spindle head. A worm and gear type of steering gear of Haynes design is employed.

The front springs are semi-elliptic in design and are 39 inches long and 2 inches wide. The rear springs are three-quarter elliptic, 41 by 42 inches in size, with spring seats collared around the rear axle, so that none of the strain comes upon it. The wheelbase is 120 inches and the wheels are 36 inches in diameter.

Four body designs are fitted to the Haynes model 21 chassis, a five-passenger touring body, four-passenger close coupled, a colonial type coupe and a limousine body.

The model Y chassis embodies the same general features of construction as the model just described. The motor has four cylinders, cast in pairs. Each cylinder is 5 inches bore and has a stroke of 5½ inches, giving the motor an S. A. E. rating of 40 horsepower. It is in reality a larger edition of the model 21 and has the same arrangements for cooling and ignition as are found in the newer model.

Model Y Chassis

The frame is of cold rolled steel, as in the other model, but has a 2-inch drop and is offset 2 inches. The wheelbase is 125 inches and 37 by 5½ tires are fitted. Also, like the model 21, four different body types are fitted to the model Y chassis. These include a seven-passenger touring car, a four-passenger close-coupled body and two limousine bodies, a vestibule front and an open front limousine. The open front limousine is equipped with half doors, while the vestibule front has full fore doors.

The equipment of both models as put on the market includes top, windshield, lamps, acetylene tank, speedometer and extra demountable rim.

Of the three body styles illustrated in Fig. 6 and Fig. 7, the one at the left of Fig. 6 is the seven-passenger touring body fitted to the model Y chassis; the one at the right is the five-passenger body, and Fig. 7 shows the close-coupled body which is fitted to both models.

Manufacturers' Communications

NOVEL WAY TO GET PICTURES

NEW YORK—Editor Motor Age—It is no easy matter to get a group photograph of motor trucks, owing to the fact that their constant use in business makes it impossible to appoint a time when the trucks would be idle. A unique plan was recently carried out by us whereby we secured an excellent group of Commer trucks in use by a selected list of its various customers. We were desirous of having a group picture taken in front of our building. A Sunday was selected as the most appropriate time when the trucks could be gotten together. Substantial cash prizes were offered to the drivers who reported with their trucks, the awards being made by an outside committee which based its judgment on the appearance of the trucks. Due consideration was given to the length of service and distance traveled when awarding the prizes for best appearance.

It is a notable fact that the Commer truck driver who secured the first prize had charge of the truck owned by the piano house of Jacob Brothers, who were the first firm in New York to file an order for the Commer. The second prize went to the driver of Herbert Brothers, the coal men; the third prize to the driver for P. F. Collier & Son, publishers of Collier's Weekly. All the trucks were in such good condition that it became an exceedingly difficult task to arrive at a decision, and it was necessary to draw for each of the prizes by those trucks which were tied for the different positions.—Wyckoff, Church & Partridge.

FAVORS TEAM COMPETITION

New York—Editor Motor Age—In making the Glidden tour a team competition instead of a contest between individual cars, the contest board of the American Automobile Association has tacitly approved an idea originally advanced by the Maxwell-Briscoe Motor Co. That company contended that when several cars of a certain make participate in a contest, the team score should be considered rather than the individual car score, because it frequently happens that only one car of the team is able to finish.

This very thing happened in the last Glidden tour. While one car of a three-car team was awarded the trophy, the other two cars of that team suffered heavily and were withdrawn. In the case of the two Maxwell entries, both cars finished and made the best team score, showing consistent rather than occasional reliability.

The team of three Maxwell cars which have been entered by the United States Motor Co. and which will be known as New York team No. 1, will run under conditions we always have championed.—United States Motor Co.

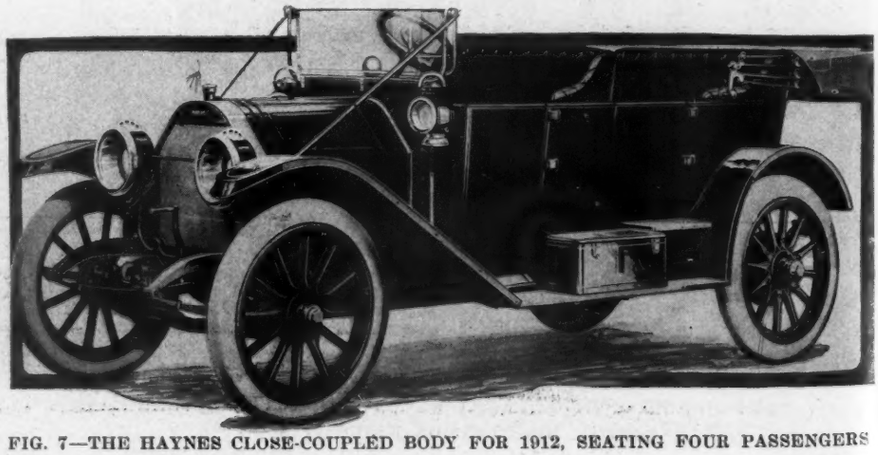


FIG. 7—THE HAYNES CLOSE-COUPLED BODY FOR 1912, SEATING FOUR PASSENGERS

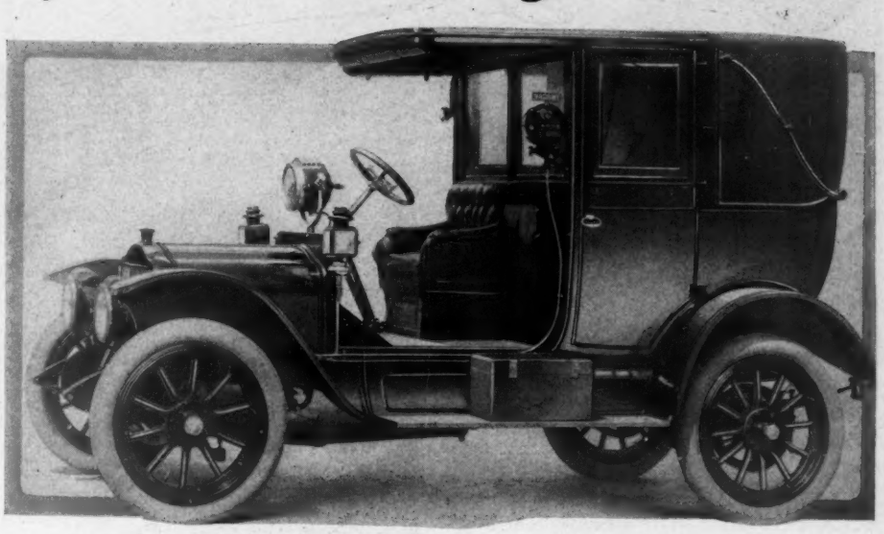
White Company Now Making Taxicabs

THE White Co., of Cleveland, now is making taxicabs, the features of which are the motor, front and rear axles, frame construction, distribution of weight and accessibility. The tires are 34 by4½ inches, on all wheels, which are fitted with quick detachable, demountable rims. The motor is of the long-stroke type, having 3¾-inch bore and 5⅛-inch stroke, and is identical with that used in the White trucks. The cylinders are cast en bloc with all valves enclosed, operating on one side by one cam-shaft. The intake manifold, which is heated, the exhaust manifold, which is cooled and the water manifold are all cast integrally with the motor. Lubrication is by a combination of the splash and positive feed systems; the oil tank having a capacity of 1 gallon.

Cooling is effected by a gear-driven centrifugal pump, giving positive water circulation through a honeycomb radiator. A flywheel with spokes cast integrally is located behind the radiator. The carbureter is of White design. The clutch is of the leather-faced cone type. The transmission is of the selective type with four forward speeds and a reverse, with the direct drive on third speed. All gear shafts are mounted on ball bearings.

The front axle is a solid drop forging of forty-point carbon, heat-treated steel, all I-beam construction and is identical with that used in the 1500-pound delivery wagon. The rear axle also is the same as used in the 1500-pound wagon and is of special design. It consists of three members—gear case, right and left axle gear case. All gears accessible through large cover on top of housing. The axle spindle is of chrome nickel steel, the brake band supporting arm is integral with the axle housing, and the gears are removable without splitting gear case.

The gasoline tank, of 10-gallon capacity, is located under the driver's seat. Internal expanding and external contracting brakes of 2½-inch face are lined with raybestos and act on the rear wheel drum. The steering gear is of the worm and sector type, with ball thrust-bearings and a wooden steering wheel of 18-inch diameter, so that with an inswept frame easy and narrow turning is permitted.



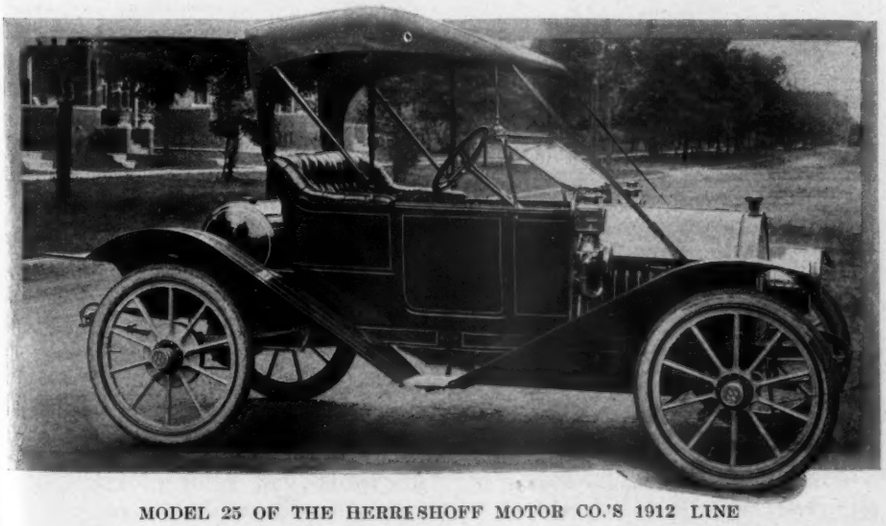
NEW TAXICAB MADE BY WHITE COMPANY

Ignition is accomplished by means of a high-tension magneto and one set of spark plugs, which reduces to a minimum all wiring, commutator, coil and battery troubles. All springs are especially designed and made of Krupp steel, the front being semi-elliptic, and the rear three-quarters elliptic.

Any body may be mounted on this chassis, but the standard White taxicab body is favored. The panels of the body are metal and removable separately, so that in the event of any part of the body being damaged, while in service, it is not necessary to lay up the cab for any length of time to make repairs.

The control of the cab at the driver's seat is arranged with both throttle and spark advance, mounted on the steering wheel, together with a foot accelerator under the driver's right foot, the usual levers controlling the gear-shaft and emergency brakes are located at the right of the driver. Various gear-ratios are used according to the conditions under which the cabs are to be operated.

The standard wheel base is 110 inches. However, any length will be furnished without additional charge. The tread is standard at 56 inches, clearance is 9½ inches. The total weight of the cab completely equipped, is approximately 2,900 pounds.



MODEL 25 OF THE HERRESHOFF MOTOR CO.'S 1912 LINE

COLUMBUS' NEW SCHEME

Postmaster H. W. Krumm, of Columbus, Ohio, is about to inaugurate a system of mail collection which will be unique in the United States. It is arranged to employ mail collectors and each collector is to own and operate his own car. The cars are to be of one general style as to body and color of the paint. The system was proposed to the superintendent of mail collection when he visited Columbus recently and it met with his approval. The decision to make the change is the result of careful investigation on the part of Postmaster Krumm. The contract which expired July 1 was for $7,500 per year, and it is believed a great saving will be made under the new system. Columbus is one of six or seven cities in the country using motor cars to collect mail. Under the new system Columbus will be the only city where the horseless system is used by the direct payment of operating expenses to the carrier.

A NEW HERRESHOFF

A new model put out by the Herreshoff Motor Co. is a 25-horsepower roadster with 100-inch wheelbase and selling at a low price.

From the Four Winds

DURANGO Has Club—The Durango Automobile Club of 100 members has just been made a part of the state association, and about five other Colorado towns are planning to become members of the state organization.

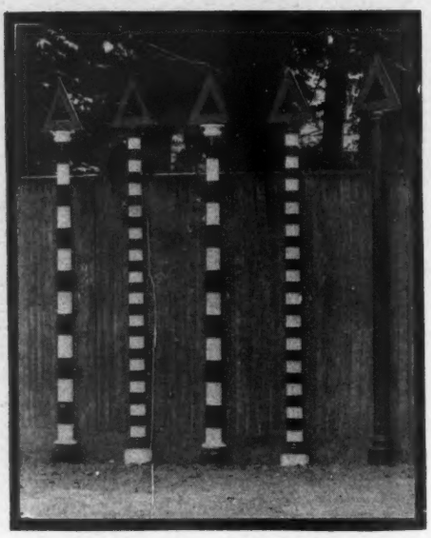
Buying Michigan Tags—Since the first of the year Secretary of State Martindale, of Michigan, has collected license fees amounting to $93,000, which is an increase of $20,000 over last year. The number plates for next year will be black numerals on an orange background.

Buying Badger Tags—Twenty-five license applications per day is the average reported by the secretary of state of Wisconsin since August 1, when the new registration law requiring annual registration and increasing the former perennial fee of $2 to $5 annually, went into effect. The secretary is estimating that 20,000 cars will be re-licensed on January 1, 1912, and has ordered 40,000 number plates for the initial rush.

Meet Date Changed—Originally scheduled to take place on September 16, the date for the race meet to be conducted by the Philadelphia Automobile Trade Association has been set forward a week and will be held at the Point Breeze track on Saturday, September 23, 2 weeks before the Fairmount park road race. By postponing the event a week, not only will the meet attract more fast cars but a larger list of the best drivers as well, for the originally selected date conflicted with the meet to be held at Syracuse, N. Y.

Named the Island Highway — Island highway is to be the official name of the main north and south road on Vancouver Island, B. C. The road, which starts at Victoria, runs through Nanaimo and on to Campbell river, from which it will be extended to the north end of the island. It was formerly known as the Island highway, and embraces the Malhat drive. The Island highway is met by the Alberni road at Nanaimo. The Victoria Automobile Association has commenced placing signs along this route. These will be the same in appearance as Pacific highway signs.

St. Louis Decision Protested—W. C. Anderson, St. Louis manager of the Ford branch, has filed a protest against the award of the roadster trophy to the Flanders in the recent St. Louis-Kansas City reliability run. The Ford finished with a perfect score, but was disqualified on the protest of the Flanders driver that the Ford had a wrapped steering wheel and a muffler cutout wired open, neither being stock equipment. The Flanders then was awarded first place. In the most recent protest it is claimed that the technical committee passed the Ford as all right,



STUDYING SIGNBOARD COLORS

and that the referee's attention was particularly called to the muffler cutout. In the meantime, word has been received to hold up the award to the Flanders.

Hold-up Men Punished—Judge Osborn, of Columbus, Ohio, recently imposed sentences of 6 months in the workhouse and fines of $100 and costs upon William Jones and Edward Cook, convicted of impersonating officers and holding up motorists. The two men who had been operating in an outlying section of the city for several weeks were caught in a trap laid by Officer Creedon, who operated a motor car at a high rate of speed for the purpose of catching the hold-up men.

Hoosiers Seek Road Improvement—The building of the projected boulevard through the heart of Indiana's sand dunes in the northern part of Porter and Lake counties promises to be followed by agitation in Laporte county for the improvement of the highway running east from Laporte through Rolling Prairie to New Carlisle. With the improvement of the road from Laporte to South Bend the last link in the proposed motor roadway from South Bend to Chicago would be completed.

Worcester Will Do Signboarding—The matter of posting signs in and about Worcester, Mass., that will furnish information to the motorists has been taken up by the board of governors of the Worcester Automobile Club who intend to do away with the annoyance placed upon visiting motorists who have to ask directions every time they enter the city. At present there are but a few signs on the principal streets of Worcester and they only direct the motorists to Boston and Springfield, but it is the intention of the Worcester Automobile Club governors to erect in conspicuous places artistic signs with arrows pointing in the direction of towns and cities that are designated by the signs, which will help the tourists.

Maxwell Owners Picnic — An unusual picnic was pulled off at Defiance, Ohio. All owners of Maxwell cars in Fulton county were invited to meet at Wauseon, from which a run was made to Napoleon and thence to Defiance where the picnic was held. The undertaking proved a marked success from numerous standpoints and will probably be made an annual affair. Numerous contests were pulled off, followed by a chicken dinner provided by H. A. Lee, Maxwell agent at Wauseon.

Will Vote on It—Good roads enthusiasts throughout Jackson county, Mich., are hammering away in an effort to secure the good roads system with the coming of the next spring election. The prospects of the movement carrying look bright at the present time. The proposition of permitting the people to vote on the good roads system was turned down by the supervisors at a recent meeting, but as public sentiment, especially in the rural districts, has undergone a decided change, there is little doubt but that the board will act favorably when the matter comes before it at the October session.

Would Buy Toll Road—A meeting of citizens of Baltimore was held in Mayor Preston's office to determine upon a price, if possible, for the purchase of the tollgate on the Resiterstown turnpike, near the Park Heights avenue entrance of Druid Hill park, the only tollroad remaining within the city limits. At the conclusion of the discussion Mayor Preston asked the directors of the turnpike company if they would accept $70,000. They said that they would recommend the acceptance of $75,000, $5,000 less than they asked the good roads commission and $15,000 more than the commission offered.

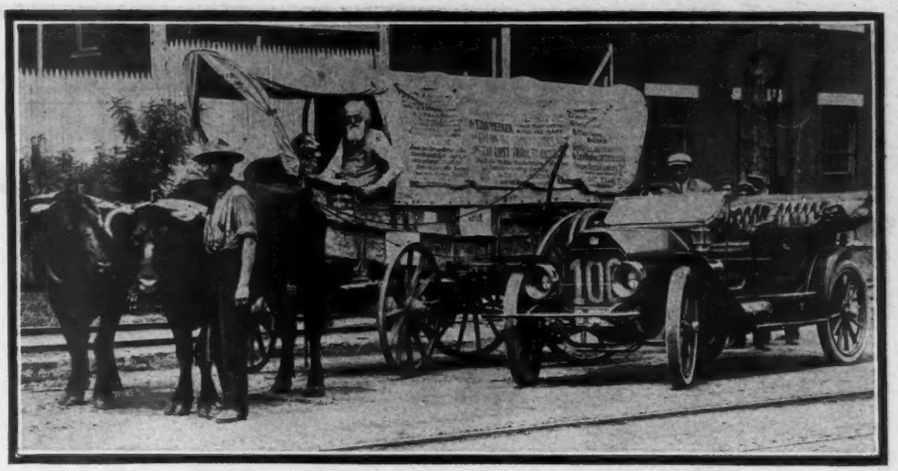
Teaches Joy Rider a Lesson—A. W. McCready of the E-M-F garage at Santa Barbara, Cal., has taught a moocher of motor car rides a severe lesson. The fellow had been playing the part of a prospective buyer and was given demonstration rides. But Santa Barbara is no great city, so his reputation soon commenced to be passed around. When he entered the E-M-F garage the other evening to look at something between $5,000 and $10,000 he was recognized. But Mr. McCready took him out. He took him beyond Goleta, 11 miles out. Then Mr. McCready expressed the thought that there was a rear tire trouble. He asked his passenger if he would not please step out and kick the

rear tire. This he did, and he kicked so hard that the car was sent flying back to Santa Barbara, leaving Mr. Moocher all alone on a dusty road in the stilly night.

Safeguarding Garages—The fire and police board of Denver has recently notified all garage owners that they must obey more strictly the municipal fire regulations which prohibit the heating of garages by means of a hot air furnace or stoves or by any heating apparatus located in the same building and which provide that no gas light or open flame of any kind shall be allowed in garages.

Lu Lu's Will Have a Run—On Saturday, September 16, the recently-organized Lu Lu Temple Automobile Club of Philadelphia will conduct its initial social run, the objective point being Atlantic City. In addition to souvenirs to be presented each car entered before the Saturday preceding the run, special trophies will be awarded cars finishing nearest the secret time named for the run, the latter to be determined by the usual method—two secret guesses to be made, sealed and opened upon completion of the event, divided by two the result to be the allotted time, the winner to be the car finishing nearest to it.

Lesson for Buckeyes — The Ohio state highway department at Columbus, O., with the assistance of the Ohio Good Roads Federation gave a roads exhibition at the Ohio state fair during the week of August 28 to September 1. The highway department at Washington, D. C., sent displays and models and the exhibits were complete in every respect. In addition to the federal display the exhibit consisted of samples of brick, stone, gravel, asphalt and other road-building materials as well as catalogues, pamphlets and other literature regarding road materials and machinery used in road construction. The displays were in the vehicle building at the fair. The exhibit was in charge of James R. Marker, state highway commissioner.



OLD EZRA MEEKER AND J. A. WICKE IN MOLINE

Many in Studebaker Run — Frank B. Willis, manager of the Studebaker Brothers' Co. of Indianapolis, states there are forty entries for the E-M-F and Flanders owners' sociability run from Indianapolis to Chicago and return, to be made September 3, 4 and 5. It is the intention for the party to spend Labor day in Chicago, returning home on the morning of September 5.

St. Louis Club Will Help—The Automobile Club of St. Louis has considered favorably a suggestion from Governor Hadley that the organization coöperate with the Kansas City club and others in dedicating the new state highway just selected with appropriate ceremonies about October 15. "It is our purpose to have a motor car parade across the state at this time, beginning at St. Louis and Kansas City and meeting at Columbia for the official ceremonies," the governor declared in a communication to the club. He announced that he had appointed a committee to meet with the representatives of the club to arrange the details.

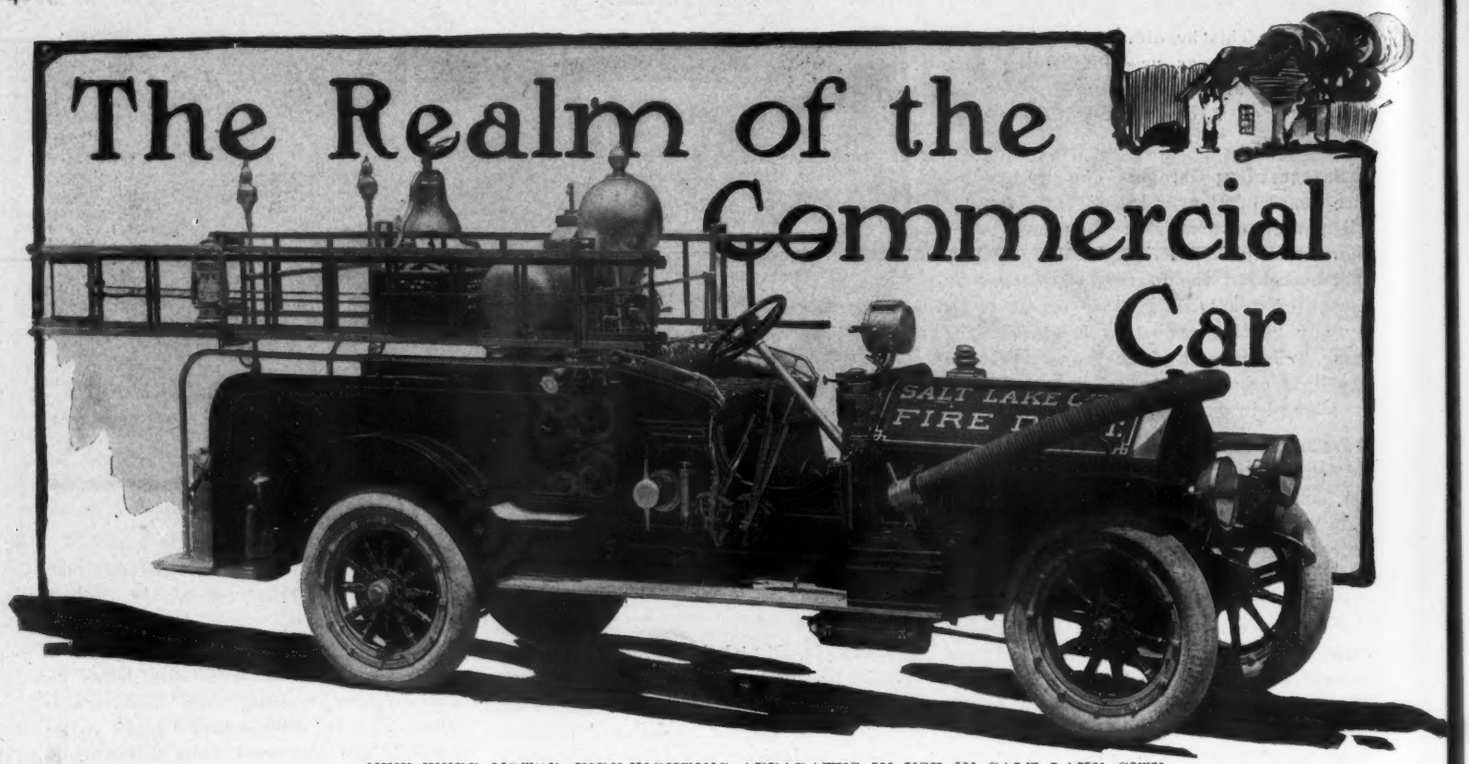
Truck Makes Hard Run—William E. Bush, southern California distributor for Pierce-Arrow touring cars and trucks, drove a loaded Pierce-Arrow truck to Bakersfield the past week from Los Angeles, via Cajon pass. This is the first time a loaded truck has made the trip between these two points. The Pierce-Arrow carried 8,000 pounds of iron pipe.

The Old and the New—An accompanying illustration is remarkable in that it presents the acme of durability in both the old and the new methods of travel. The prairie schooner and the oxen, which are the property of Ezra Meeker, a patriot who is working for perpetuation of the lost Oregon trail, form an outfit that has traveled 8,000 miles. The car, with J. A. Wicke of Cedar Rapids at the wheel, is a 1911 Moline, whose speedometer shows it has traveled more than 27,500 miles since it was turned out of the factory in East Moline. The machine, known as No. 100, was a winner in the 1910 Glidden.

Test of Visibility of Sign Posts—One of the points being dealt with by the British Roads Improvement Association, in connection with its efforts to prepare a scheme for the unification of the erection and maintenance of warning signs, is the question of the visibility at night of the posts carrying the signs. At present the majority of the sign posts are painted red; it is thought that if they were painted differently they would be much more quickly observed by the road traveler. Five sign posts have therefore been erected at the top of a busy hill near London. The posts are painted as follows: 6-inch bands of black and white alternately, 3-inch bands of black and white alternately, 6-inch bands of red and white alternately, 3-inch bands of red and white alternately, all red. Any road user interested in the matter has been invited to forward to the secretary any observations he would care to make upon the comparative visibility of the posts.

KISSEL TRUCK IN USE IN HONOLULU

The Realm of the Commercial Car



NEW WEBB MOTOR FIRE-FIGHTING APPARATUS IN USE IN SALT LAKE CITY

A NEW delivery wagon intended for light trucking and package delivery purposes is being manufactured by the Mora Power Wagon Co., Cleveland, O., and known as the Mora delivery. It is intended to carry a load of 1,500 pounds, and with an express body has a loading space 78 inches long and 44 inches wide, and when fitted with a light stake body has a loading space of 84 inches long and 44 inches wide.

The motor is a two-cylinder waterjacketed type, with 4½ inch bore and stroke. It is located transversely beneath the forward hood. Water circulation is by thermo-syphon with a square tube radiator forming the top of the bonnet. Additional cooling is furnished by the flywheel made with fan blade spokes. Lubrication is by combination of splash and mechanical system, the mechanical means forcing oil to the pistons and main bearings of the crankshaft. Ignition is by low-tension magneto with step-up coil.

From the motor the transmission power is through the rear wheels, through a planetary gearset encased with the differential on the jackshaft, and by side chains on the jackshaft sprockets to the rear wheels. The planetary is two forward speeds. High speed is obtained by lever in the middle of the floor board or at the right of the driver, and low speed and reverse by pedals. Steering wheel is located on the left side. Ball bearings are used to carry the differential and Hyatt roller bearings on the outer ends of the jackshaft.

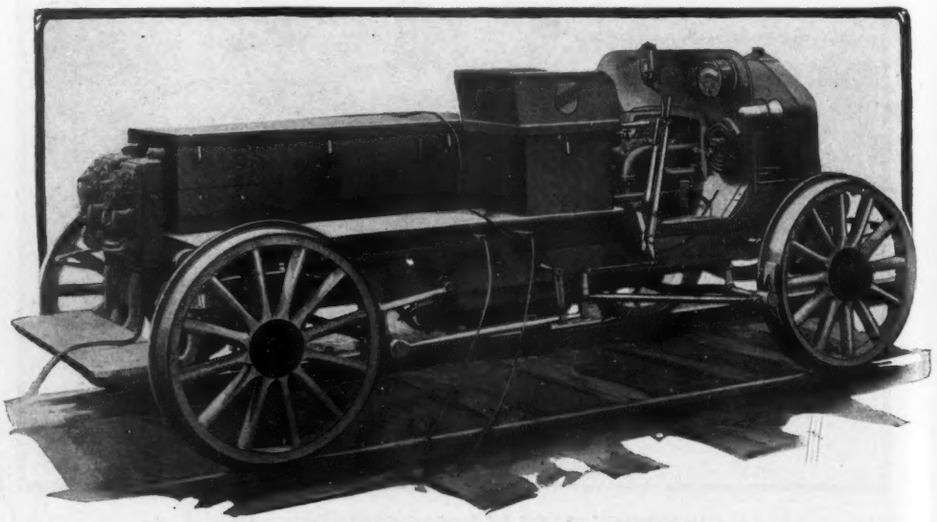
Load wheels are 36 inches in diameter and carrying 2 and 2½-inch solid tires in front and rear. When pneumatic tires are used the tires are 34 by 4 inches.

The chassis frame is a pressed steel one 140.5 inches in length with the side members spaced 34 inches apart. This frame is supported on a set of semi-elliptic springs, the front ones 39 by 2 inches and the rear ones 43 by 2 inches. Both axles of special steel are 1½ inches square. The wheelbase is 94 inches.

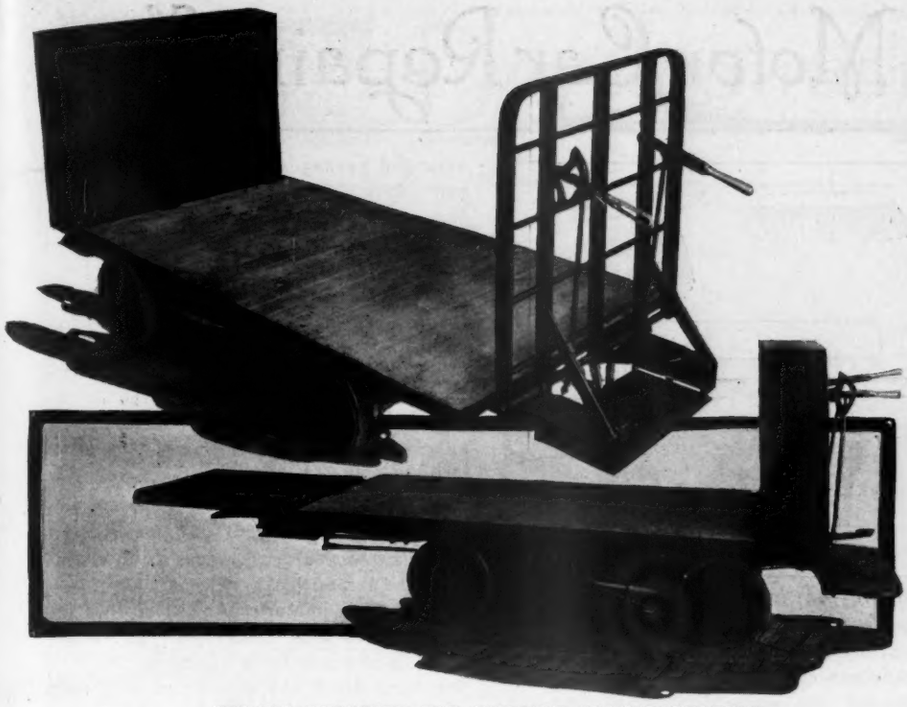
RAILWAY REPAIR CAR

Railway companies early perceived the value of the gasoline motor for use by repair gangs along the lines whose duty is to lay new rails and do many other duties connected therewith. In order to secure a satisfactory car for this work the Chicago, Rock Island and Pacific Railway recently ordered from the Auto Gas Engine Works, Philadelphia, a motor car known as the tool car, which is illustrated herewith. The power plant of this car is the same as that used in the ordinary motor car, namely, a four-cylinder motor, 4¼ inch bore, 4½ stroke. Drive from the motor is through the cone clutch and three-speed gearset.

The equipment of this car for repair work is perhaps the most interesting. It is fitted with a Crocker & Wheeler generator with a capacity of 1,000 revolutions per minute of 52 amperes at 125 voltage. This generator is driven by the gasoline engine and is used to furnish electric current for drills, hammers, etc. To eliminate the necessity of constantly moving the car along the track from one operation to another a length of electric cable is carried which can be laid along the track for a quarter of a mile in any direction of the car. At 20-foot intervals along this cable are plug-in switches and each elec-



REPAIR CAR USED ON ROCK ISLAND RAILWAY



TRUCKS DESIGNED FOR FREIGHT TRANSPORTATION

tric portable tool is fitted with a special plug, so that all that is necessary is to plug in at the most convenient switch in order to get electric power to operate drill, hammer, etc.

The car has capacity for eight to ten people, together with their necessary tools, and is in addition equipped with six electric drills, one electric saw for metal rails, portable emery wheels and two electric spike-screwing machines.

SALT LAKE'S NEW FIRE-FIGHTER

The city of Salt Lake, Utah, has installed a new motor fire-fighting apparatus which was made by the Webb Motor Fire Apparatus Co., of St. Louis. The cylinder bore and stroke is 5¾ by 6; the wheelbase is 147 inches; the tires are 40 by 6 inches; a three-disk clutch is fitted and the gearset is selective sliding.

OREGONIANS ADOPT THE MOTOR

Pendleton, Oregon, is situated in the heart of the wheat belt where 1 per cent of the wheat raised in the United States is grown and sold. Upwards of 4,000 inhabitants reside in this growing town, and considerably more than 300 cars have been purchased by this enterprising population.

As elsewhere in the northwest, the majority of these cars are used as pleasure vehicles, but the farmers in the vicinity of Pendleton believe that the motor car is "a mighty good work horse." On a number of the wheat ranches the car has become a necessity, and it is surprising to note how it has supplanted the horse.

Instead of using horses on the thrashing outfits, the powerful machines are run by gasoline-driven motors, and the caterpillar traction motor is used to move the thrashers from one farm to another, thus taking the place of thirty-two horses. But $5 worth of gasoline per day is required for these machines and $2 worth of lubricating oil.

On one of the largest ranches, containing over 1,000 acres, the foreman has installed a runabout with which he oversees all the work done on the farm. Whenever a thrasher breaks down, he is quickly on the ground, and then is soon on the road to town and back again in no time with the necessary parts for repairs.

Besides this car, another one is used in various capacities: to supply power to run the forks when alfalfa is staked, also to operate the chop mill at the ranch house, and to carry supplies from town.

Bill Horne, on upper McKay creek, near Pendleton, uses his car to pull stumps and run a sawing machine; while Sam Stone, of Birch Creek, uses his to plow and harrow his truck garden.

A number of the barns have been turned into garages and work shops. One farmer backs his motor car into a contrivance made of timbers, which looks much like the supports for a windmill, only the timbers support a number of wheels attached to steel shafts and connected by driving belts. The rear tires of the car are removed and in their places are belts which run the wheels overhead. Thus the whirring motor car's engine drives machinery, sharpens plow shares to be used the next spring.

FREIGHT DEPOT TRANSPORTATION

The increase in the amount of freight and express packages handled at many of the railway depots in the larger cities has made it necessary for the freight departments, the express companies to economize by increasing the speed of handling merchandise and also if possible reducing the space of trucks, etc. needed for handling the products in the warehouse. With this object in view the Automatic Transportation Co., Buffalo, N. Y., has built a variety of electric trucks, designed specially for this work. These are illustrated herewith. These trucks are driven by twenty-four cells of battery, carried in a steel receptacle at one end of the truck. The battery is arranged in two trays and has a capacity for 25 miles. The trucks are made to operate at either 2 to 10 miles, and to carry a load of 2,000 to 4,000 pounds. The weight of each truck is 1,800 pounds. Its wheelbase is 50 inches, its tread 36, and wheel diameters 16 inches. Solid rubber tires are used.

These trucks are made with an I-beam frame construction, on which the platform rests direct. The electric motor is located under the frame between the axle. The truck platform on which the load is carried measures 42 inches wide and 7 feet, 1 inch in length. At one end is a vertical iron gate hinged at the bottom and when such gate is placed horizontally, as illustrated, it also can be used for a loading platform at which time the total length of the load carrying platform is 10 feet 2 inches. Like other trucks used in depot service, these are made with the control at each end; the control is illustrated.

MORA'S NEW MOTOR DELIVERY WAGON

The Motor Car Repair Shop

What Racing Teaches

A WEEK spent in visiting the various racing camps just before the Elgin national stock road races, has impressed several facts upon the mind of the writer which should be of interest to both the professional and amateur repairman. Most important of these is cleanliness, with the advantages that are obtained in its maintenance.

In a certain camp, for instance, immediately after practice each day, a number of skilled workmen would attack the machine with gasoline and brushes; every part would be thoroughly cleaned; and, as all grease and dirt was brushed from the various mechanisms of the car, a careful inspection was made which allowed no flaws or loose bolts and connections to escape the watchful eyes of the workmen.

It is remarkable how much trouble is avoided by the discoveries made during this simple operation of cleaning. Little cracks that if not found in time might cause not only the loss of the race but possibly a couple of lives as well, often are revealed. Loose nuts and connections are found that, if left untouched, would give rise to all sorts of trouble; and so it is that not only is cleanliness a virtue even when applied to the mechanisms of a motor car, but the advantages to be gained from its maintenance are of the utmost importance.

Order and Equipment

Two other important conditions that were notable for their absence in those camps whose cars were most unsuccessful, and most rigidly maintained in the camps of the successful cars, were order and equipment. In a number of camps, many tools, and very necessary ones at that, were not included in the tool equipment; the same condition existed in the way of extra parts equipment; and as for the order in which the tools and parts were kept, there was none; disgraceful disorder are the most applicable words. In some of the camps, for instance, when it was necessary to remove a valve from a cylinder, a screwdriver or some other similarly unsuitable tool would be employed to pry up the valve spring so that the spring seat retaining key could be removed. The result was that numerous attempts, requiring considerable hard work and the waste of much valuable time, were made before the valve spring finally was removed. In the camps where these conditions existed, the workmen were required to do so much unnecessary and unusually hard work that as the days of the races drew near they were so worn and weary that they began to shirk and neglect the things that really needed attention.

A marked contrast to the conditions just mentioned was to be found in some of the other camps. If a valve had to be removed, the mechanician went to a certain drawer of a portable tool chest, picked out a specially-adapted valve-lifter, attached it to the cylinder of the motor, and at the first attempt, if one could call it such, the spring was lifted easily, the key removed, and the spring and valve taken from the cylinder. With the same ease, the valve was replaced, and where the aforesaid screwdriver method might have made the job possible in 20 minutes and with a couple of bruised fingers, the method in which the proper tool was used took but 1 minute to remove the valve and 1 to replace it, without any injury or inconvenience to the workman.

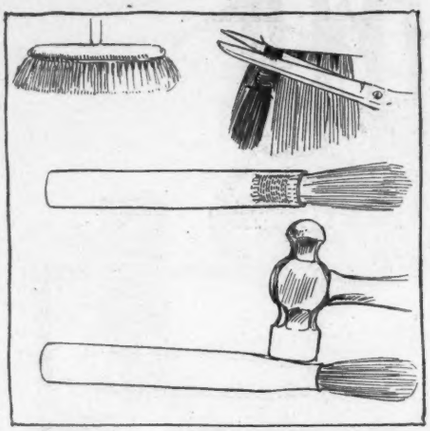


FIG. 1—MAKING THE SHELLAC BRUSH

Still another point was the care with which the extra parts were kept in some camps, and lack of care which they received in others. In one camp, if an extra connecting rod were called for, instead of delving into a pile of junk, as it appeared to be, the driver or mechanic would go to a chest, take out one of the neatly arranged packages, and after unwrapping the paper and cloths in which the part was carefully preserved, there would be a connecting rod complete, rod, cap, bolts and bushings.

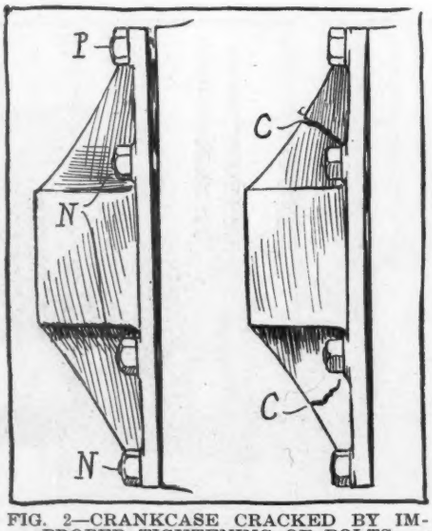


FIG. 2—CRANKCASE CRACKED BY IMPROPER TIGHTENING OF BOLTS

The repairman or owner who cares for his own car should profit by the knowledge of these conditions, and keep his motor clean, his tools in order, and his extra parts carefully wrapped in cloths or the like, so that they will not be bent, broken or burred up when the time comes to fit them in place of a worn or injured part.

A Homemade Brush

It often happens that when it becomes necessary to shellac the edges of an engine or transmission gear case, or the lower portion of the motor crankcase so that the oil will not leak therefrom, the shellac brush is nowhere to be found, or the bristles have dried and become as stiff as a piece of wood. In such cases a very good brush can readily be made by cutting a bunch of hair from an old bristle broom, after binding it with a cord as illustrated in Fig. 1, and then placing the bunch of bristles in the end of a piece of copper tubing and compressing the end of the tubing by striking it with a hammer. Brushes made in this way also are useful in applying soldering acid to parts to be soldered or tinned.

Tightening Nuts

Perhaps one of the most common errors made by the amateur or junior mechanic is that of tightening a series of bolts improperly. In replacing the lower portion of a motor crankcase, for instance, the lower portion will be forced up into place and a single nut or stud fitted into place to hold it. Then another bolt will be fitted on the opposite side to hold the case snugly into place. If the case happens to fit snugly into place all may be well so far; but should the case sag a little on one side, when the opposite nut is drawn up tight, the case most likely will be cracked. Herein lies the important point. In assembling any part which is secured by a series of bolts, one should be careful, first, to see that the part has an even and snug bearing all around; second, to make sure that the bolts are drawn up evenly. One should not draw up the nut of one bolt as tightly as possible, then proceed to the next one and do the same. The nuts should all be drawn up a little at a time, and one by one around the case until all become fairly tight.

An error of this nature is illustrated in Fig. 2, showing the end of a crankcase reinforced with webs or flanges. In failing to properly fit the detachable portion to the end of the case, and then drawing the nuts N and P up improperly, the webs were badly cracked, at C.

Development Briefs

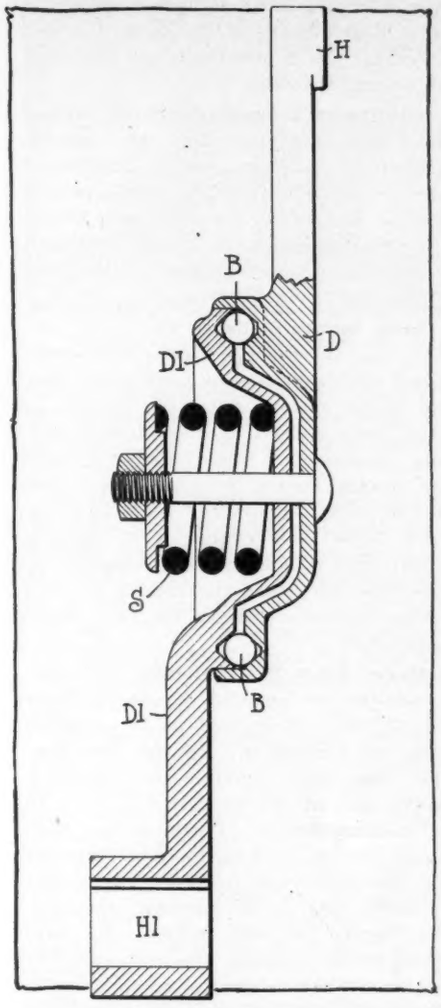


FIG. 1—DESIGN OF NEW STARTING CRANK

Evansville Starting Crank

THE Evansville Mfg. Co., Evansville, Wis. ,is manufacturing a starting crank for gasoline motors. It consists of two disks D and D1, Fig. 1, clamped together by a heavy spring S. To the disk D attaches the starting handle at H and to the disk D1 attaches the hub arm at H1, these two being diametrically opposite. Four small balls B placed in conical cavities in the adjacent faces of the disks are used. The operation is as follows: When a greater force than the crank at H is set for is applied to the handle these balls B start to roll from their sockets, pressing the spring S and then the handle portion or disk D until the handle comes up with the hub.

The initial strength of the crank is not dependent on the sliding friction, but is a frictionless balance between the force applied to the handle and the compression of the spring S. By changing the adjustment of the spring S the handle can be set for operation at any particular point, but should be adjusted to act for a little greater strength than that required to turn over the engine on compression. Should a back kick occur the disk D1 rotating rolls the balls B out of their socket, without transferring a terrific back kick impulse to the handle at H.

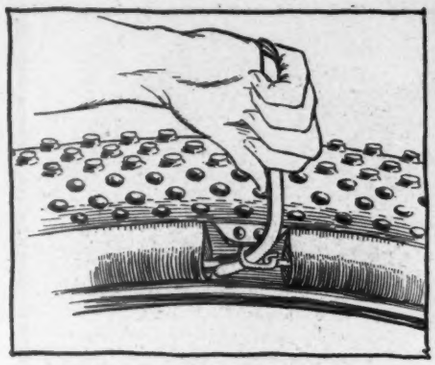


FIG. 2—ADJUSTING WOODWORTH TREAD

Apco License Plate Holder

The Auto Parts Co., Providence, R. I., manufactures the Apco number plate holder by which the state license tag is carried. Fig. 4 illustrates the method of carrying a license plate on an I-beam front axle, this consisting of a bracket B with an extending arm B1 resting over the top of the axle and carrying a screw Z with locknut, this screw being the holding feature of the device. By means of a slot S in the number plate and a slot S1 in the bracket B it is possible by a common bolt to attach the number plate at any desired point. Although the illustration shows but one corner of the plate it is attached at the other three corners in the same way.

Christofferson Carbureter

Silas Christofferson of Portland, Ore., is manufacturing a carbureter of new design by which he believes the efficiency is very much increased. The idea is this carbureter is to do away with the side resistance to the flow of the air and to give the gas a straight path from the point of mixture to the outlet. This was accomplished by straightening the path through the jacket and inner chamber, Fig. 3, thus increasing the speed of the incoming air. The increase in speed of the air tends to form more of a vacuum over the gasoline cup at the point of mixture, making the mixture richer.

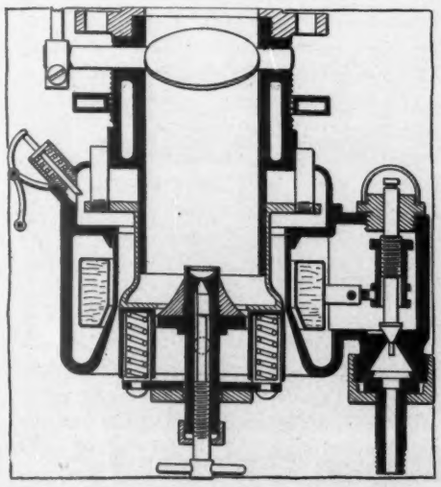


FIG. 3—CHRISTOFFERSON CARBURETER

Quick Adjustment for Woodworth Treads

One of the objections to tire protectors has been the time required to apply and remove them. The Leather Tire Goods Co. of Niagara Falls, N. Y., has brought out an improved form of the Woodworth tread which has been devised with the idea of making the tread capable of quicker attachment. The new tread and the tool with which it is adjusted is illustrated herewith, Fig. 2.

The tread is held on the tire by rings on each side composed of coil springs. These keep an even tension on the covers at all times, preventing any looseness which might cause chafing or heating of the tire. There are from six to eight of these springs on each side of the tire. In each end of the springs there are screwed strong hooks which are connected by hooking into a steel link fastened midway between the springs. With the tool illustrated it is possible to draw up and fasten the hooks in one motion so that the work is quickly and easily done without undue strain on either the protector or the operator. At present this new adjustment is applied to the new center-studded treads.

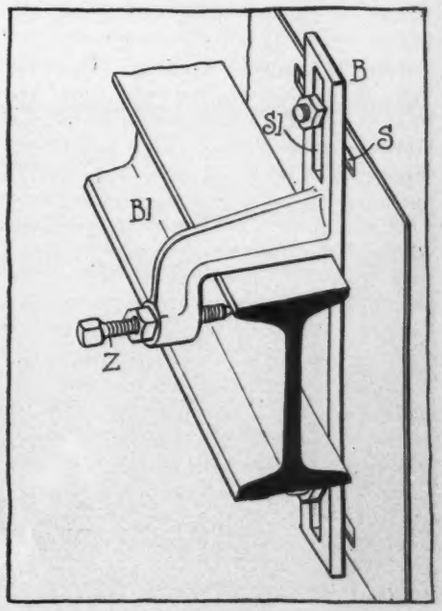


FIG. 4—APCO LICENSE PLATE HOLDER

Among the Makers and Dealers

MITCHELL Tries New Wheel—The Mitchell-Lewis Motor Co. of Racine, Wis., is experimenting with a new type of wheel for motor cars. The wheel is composed of springs instead of spokes, the springs operating on rubber rollers.

Berryman Makes Change—I. G. Berryman, formerly superintendent of the Marion Motor Car Co., has assumed the management of the Wabash Gear Works of Terre Haute, Ind., which manufactures transmissions, shifting levers, pedal assemblies, clutches and hub material.

Adding to Drop Forge Plant—The Flanders Mfg. Co. of Pontiac, Mich., is expending $30,000 more on its drop forge plant to install new equipment which was found necessary because of the rapidly increasing business. Five more big hammers are being placed, which will double the present equipment.

Mitchell Branch in Kansas City—The Mitchell-Lewis Motor Co. will establish a branch in Kansas City. It will be in a three-story building located at the southwest corner of Sixteenth and Grand. E. J. Kilborn, of the Mitchell factory, is to manage the branch. The Kaw Valley Auto Co., which represented the Mitchell for 3 years, has not yet announced what line it will take up in place of the Mitchell.

Caring for Employes—Employes of the Brush Runabout Co. of Detroit, Mich., have been provided with tennis courts and croquet grounds, as a unique way of looking after their welfare. The grounds were dedicated with the start of a tournament among six teams, five of which are captained by young women. The feminine element predominates, with thirty young women and twelve young men trying for honors.

Norwalk Company Bankrupt—The Norwalk Motor Car Co., Norwalk, Ohio, has been adjudged a bankrupt in the United States court at Toledo, Judge Killets sitting. A. J. Schur, of Cleveland, an attorney, has been appointed receiver, with bond at $20,000. The plant will be operated by the receiver. The proceedings were brought by the Diamond Rubber and Supply Co., of Cleveland, and the Cross-Gilcrist Advertising Co., of Cleveland.

Not Handling the Westcott—Owing to the increase of business with the Cole Motor Car Co., Indianapolis, Ind., the Henderson Motor Sales Co., which is the general agent for the sale of the Cole, announces its discontinuance as representative of the Westcott car, manufactured at Richmond, Ind. The Henderson Motor Sales Co. was handling the Westcott in conjunction with the Cole in the United States, C. P. Henderson, vice-president and general manager of the Henderson Motor Sales Co., now announces that all of the firm's efforts will be devoted to the Cole product.

JOHNS-MANVILLE CO.'S NEW BUILDING

Detroit After a Plant—Detroit is trying to secure the Ignition Starter Co. of Grand Rapids to add to its list of motor car and accessory manufacturing plants. Detroit offered the company a factory. The offer has not been acted upon, but has been reported to the board of trade. The company sought has brought out a new starter for motors, which uses acetylene gas instead of gasoline.

Rambler Pushing Service Idea—In accordance with the policy of the Thomas B. Jeffery Co., Kenosha, Wis., to extend the scope of its selling organization in the service field for Rambler owners, the Milwaukee branch at 455-459 Broadway has decided to leave the accessory and supply field. The stock of sundries, which has always been one of the largest in the northwest, is being disposed of at sacrifice sale and the space it occupied in the Rambler building will be devoted to sales and service. No successor has been appointed to A. W. Shattuck, manager of the Milwaukee branch for several years, and M. B. Gilman of the factory is still in charge. J. K. Bond has been appointed sales correspondent.

Cowling in Temporarily—J. C. Cowling has been appointed temporary superintendent of the motor car department of the J. I. Case Threshing Machine Co., Racine, Wis., filling the place made vacant by the resignation of George Williams, who becomes general manager of the King Motor Car Co. of Detroit.

Remy Service Stations—The Remy Electric Co., of Anderson, Ind., has established service stations in many of the leading motor centers and will continue to place these stations in other cities as rapidly as possible. These service stations are branch houses, carrying a complete line of Remy devices and parts in stock. Each house is in charge of an ignition expert, who, with several expert mechanics, sees that the Remy equipment on cars in his territory receives the best attention.

Mason Plant Nearly Ready—It is expected the new plant of the Mason Motor Co. of Flint, Mich., will be in operation early in September. Though the company has been organized only about 3 weeks, half of the machinery to be used in the manufacture of engines has been installed. The working force of the plant for the outset will be about twenty-five or thirty men, to be increased gradually the coming fall and winter. By next spring it is expected the company will have about 500 mechanics on its payroll. The company will occupy all of the four floors of the building in which its offices are, at the extreme end of Kearsley street. The building has a total floor space of 22,800 square feet. Orders already have been received for a large number of engines.

New Olds Plant Promised—The business of the Olds Motor Works of Lansing, Mich., has increased to such an extent during the last few years that $215,000 is to be expended for the erection of a modern new factory building replete with fine equipment. Upon its completion 500 men will be added to the present force, making the total number of employes about 1,800. The output of the concern has doubled since September, 1909, necessitating the building of the new home. The W. E. Wood Construction Co. of Detroit has been given the contract for the big job, and already a large force of men is at work making the excavations. The structure will be built of brick with reinforced concrete foundations and steel sash throughout. The building will be used for painting, trimming and assem-

YOUNG WOMEN EMPLOYES IN WILLYS-OVERLAND CO. TOP DEPARTMENT

bling purposes. An order for $15,000 worth of machinery already has been given. It is expected the structure will be finished in 4 months.

Doubles Its Floor Space—The Acklin Mfg. Co. of Toledo has prepared plans for the doubling of its floor space, at its Dorr street plant. The new buildings will be of brick and steel sash construction. The concern does business in all parts of the United States, turning out steel and brass stampings for motor cars and other concerns.

Spokane a Distributing Point—The first result of the recent interstate commerce commission rate decision was felt in Spokane, Wash., last week, when H. B. Annable, district manager for the Regal Motor Car Co., announced that after a thorough investigation of freight rates his company had decided to make Spokane the distributing point for its product in the northwest.

Racine's Showing—Racine, Wis., one of the centers of the pleasure car industry in Wisconsin, makes probably the best showing of any city in the state in the thirteenth United States census of manufactures. In the period from 1904 to 1909, a gain of about 50 per cent is shown in nearly every department of manufacturing at Racine. There was an increase of 61 per cent in the cost of raw materials.

New Twelve-Story Office Building—A twelve-story office building is being erected on the southwest corner of Forty-first street and Madison avenue, New York city, for the H. W. Johns-Manville Co., which will occupy it in its entirety about May 1, 1912, as the general offices and New York salesrooms of the concern. The building will be of fireproof steel construction throughout, and will contain two Otis passenger elevators of the latest type. Each floor will have an area of 2,500 square feet, or a total area for the twelve floors and basement, which will extend under the sidewalks, of 34,500 square feet. This is but one of a chain of branch stores, warehouses, offices and factories scattered throughout the United States and Canada, which are under the supervision of the executive officers of the company, whose headquarters will be in this new building.

United Motors Starts Restaurant—The United States Motor Co. has opened a restaurant in Detroit for employes of three of its divisions, the Brush Runabout Co., the Alden Sampson Mfg. Co. and the Gray Motor Co. Four hundred employes can be accommodated at one time.

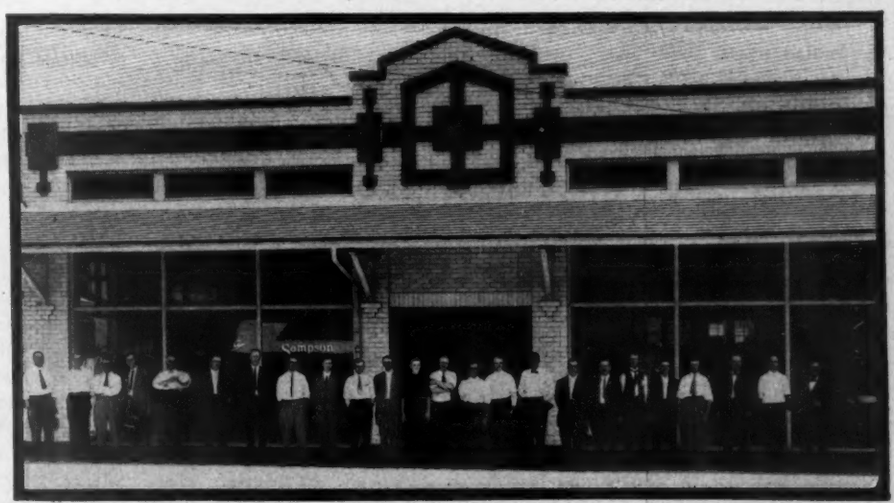
Goodyear Building a Lake—The Goodyear Tire and Rubber Co. of Akron, O., is preparing to have a storage lake, or pond, in East Akron, as a source of water supply when other sources are interferred with, so that water famines or the stoppage of regular sources of supply may not at any time necessitate the closing of their factory. Recently the company purchased 18 acres of ground in the vicinity of Kelly avenue and a dam is being built across the lower end of the property, so that about 6 feet of water will be backed up as far as the line of the property the company has acquired. It requires several millions of gallons of water a day to run the Goodyear plant, and more and more will be required as the factory expands under the plans that have been made and are now being carried out by the Goodyear company.

Fry Joins Matheson — The Matheson Automobile Co. of Wilkes-Barre, Pa., announces the appointment of H. De Long Fry of Albany, N. Y., as assistant sales manager, with headquarters at the factory.

Plum for Sharon—The newly organized chamber of commerce at Sharon, Pa., announces that Sharon has secured a big motor car factory on which work will be started within 60 days. The plant will afford employment to 2,000 hands and the company which is now being organized, it is stated, will have a capital of $250,000.

Moves Red Head Plug Factory—In order to give its customers more prompt service, the Emil Grossman Co. has removed its Red Head spark plug factory to Detroit, Mich. The plant, consisting of three floors, is located at 844 Woodward avenue, and the local display room has been removed from 874 Woodward avenue to the new location. The new plant is equipped with a battery of machines designed by the Emil Grossman Co.'s engineers, especially for the production of the augmented line of 1912 Red Head plugs.

Hoosier Merger—Articles of incorporation have been filed at Indianapolis for the Fisher-Gibson Co., which is a merger of the Fisher Auto Co. and the Gibson Auto Co., two of the largest and oldest motor car agencies in the city. The directors of the new company, which has an authorized capitalization of $50,000, are Carl G. Fisher, Cecil E. Gibson and Will J. Dobyns. Frank L. Moore, for the last 10 years vice-president and manager of the Fisher Co., has been appointed assistant manager of the United Motor Indianapolis Co.



UNITED MOTOR COLUMBUS CO. SALESMEN IN FRONT OF COLUMBUS STORE

Brief Business Announcements

NORTH YAKIMA, WASH.—Ernest Snyder is the newly appointed Everitt agent at North Yakima.

Hopkinsville, Ky.—Articles incorporating the Caye-Jones Motor Co., with a capital stock of $10,000, have been filed at Hopkinsville.

Kansas City, Mo.—The Cole Motor Co., agent for the Cole, has moved from 1924 Grand avenue to new quarters at 1804 Grand avenue.

Memphis, Tenn.—E. E. Loving Auto Co., Cole agent, has moved from 251 Madison street to the corner of Madison and Manassas streets.

Portland, Ore.—The Abbott company, of Detroit, has made arrangements for the Portland Motor Car Co. to represent it. Ross B. Cooper is manager.

Toledo, O.—A down-town office and repair shop has been opened up by the Universal Machine Co., manufacturer of Toledo motors, at 28 Ottawa street.

Portland, Ind.—The Bimel Spoke and Auto Wheel Co. is adding additional machinery to the rim-bending department of its Portland factory, as well as a large addition of its dry kilns.

Milwaukee, Wis.—The Motor Convenience Co. has been incorporated with a capital stock of $30,000. The promoters are Charles F. P. Pullen, George D. Londerback and I. W. Davis.

Des Moines, Ia.—H. B. Groves has resigned the management of the United Motors branch. Other interests, principally the Interstate Auto and Supply Co., demand his personal attention.

Baltimore, Md.—H. S. Block, formerly connected with Waterman Brothers' Co., of California, has been appointed manager of the local branch of the Stoddard-Dayton Auto Co. Leo H. Shaab, formerly manager, will be associated with the sales end of the local business.

Indianapolis, Ind.—The Broadway Automobile Co., of Pawtucket, will handle the Cole in Rhode Island. Hoscox & Burnett, Stamford, N. Y., have taken the agency for the Cole. Jay E. Moorehouse, 188 Eighth street, will handle the Cole in Milwaukee, Wis. J. B. Chambers & Sons, Danville, Ill., are new Cole agents.

Denver, Colo.—Tom Botterill, who has been conducting the Pierce-Arrow, Hudson and Columbus agencies at 1717 California street, is erecting a two-story sales and repair building at Thirteenth and Broadway, where he will remove November 1. The new structure will have offices, sales rooms and emergency shop on the first floor. The second story will be occupied completely by an overhauling shop. A balcony above the sales room will be fitted with easy chairs, writing tables and toilet conveniences for the comfort of patrons and touring parties.

Denver, Colo.—The Felker Auto Co., 1533 Tremont street, has taken the Colorado agency for the Bergdoll car.

Boston, Mass.—William Blanchard has been appointed sales manager of the Lenox Motor Car Co. here, having succeeded Frank V. Cooke.

Portland, Ore.—The Twitchell Motor Car Co., Cole agent, has moved from 342 Burnside avenue to the corner of Union avenue and Wasco street.

Boston, Mass.—Willard M. Jenkins, who has handled the Mitchell line in the Hub ever since it was introduced there, has added the Abbott-Detroit to his line, and may probably also take on the Krit.

Goshen, Ind.—The Palace garage, owned by J. E. Smith, has been moved from East Washington street to the new building just completed for that purpose on South Main street.

Milwaukee, Wis.—The Lion has secured representation in Milwaukee, the agency being in charge of Charles E. Gavin and John G. Koerner, with headquarters in the Majestic building. A new garage and salesroom is being erected for the firm.

Chippewa Falls, Wis.—John E. McDonald, for one and a half years in charge of the repair department of the Barker Auto Co. in this city, has been appointed district agent for the Overland, his territory being Chippewa and Eau Claire counties.

Kittanning, Pa.—The Kittanning Motor and Transfer Co. is a new concern at Kittanning, the capital of the coke region, formed by G. H. Burns, J. S. Claypool, Roy M. Cox, D. L. Schaffer and D. E. Acland, of that place. Its capital is $5,000.

Minneapolis, Minn.—H. H. Haynes, of the Haynes Automobile Co., Minneapolis, Minn., and John N. Knutson, of the Ideal Auto Co., St. Paul, Minn., both Cole representatives, have consolidated under the name of the Haynes-Knutson Auto Co. The salesroom for the company will be at 219 South Sixth street, Minneapolis.

Worcester, Mass.—Two new agencies have been established in this city with a possible third coming before the end of the coming month. The two new cars to be handled are the National and Everitt, the former having been taken over by the Lamont Motor Co., agent for the Elmore, while the latter, John S. Harrington, agent for the Thomas, will push in the future. The Chalmers, which has been handled for several seasons by Harrington, has been taken over by Frank H. Kenney, who will occupy the premises at 681 Main street as his distributing station for Worcester county.

Pittsburgh, Pa.—J. Eugene Beck, with offices in the Jenkins arcade building, has secured the agency of the Midland.

Denver, Colo.—The Overland Auto Car Co. has secured the agency for the Kisselkar for Colorado, Wyoming and New Mexico.

Newark, N. J.—Wallace DeWilde Co., Cole agent, has erected a new garage and salesroom at the corner of Clinton and Avon avenues and has moved there from 279 Halsey street.

Chicopee Falls, Mass.—W. Bonsor, late of the Packard Motor Car Co., is now associated with the Stevens-Duryea Co. in the production department of the factory in the capacity of supervisor of parts.

Boston, Mass.—George Parker, who for a long time was identified with J. H. MacAlman, selling Columbia and Stearns cars in the Hub, has gone over to the commercial field and he is now sales manager of the Mack Motor Truck Co. in this city.

Indianapolis, Ind.—L. A. Poundstone has been appointed sales manager of the Indianapolis branch of the Henderson Motor Sales Co., general distributor of the Cole. Mr. Poundstone until recently has been employed by the Thomas B. Jeffrey Co., Kenosha, Wis.

Boston, Mass.—Manager C. P. Rockwell of the Boston branch announced, following his visit to the conference at the Rambler factory last week of the branch managers, that arrangements had been completed to erect a new home for the Hub branch on Commonwealth in the near future.

Milwaukee, Wis.—L. P. Kilbourn, assistant sales manager of the Milwaukee branch of the Thomas B. Jeffery Co., has resigned to become sales manager of the retail department of George W. Browne, Wisconsin distributor of the Overland, Marmon and National. A large garage and salesroom building is being erected for Mr. Browne on Milwaukee street, near Oneida street.

Denver, Colo.—The Carstaphen Electric Co. has secured the agency for the full line of commercial electric trucks manufactured by the General Vehicle Co. In addition to selling this line of trucks the Carstaphen company will install a fully-equipped service department for its customers. So rapidly has its storage battery work developed that it has added a 50 by 60 foot addition to its garage at Colfax and Josephine streets as an assembling room; and in the plans for its new building at Thirteenth and Broad-

way it has set aside an entire floor, 50 by 125 feet, for the assembling of storage batteries.

Milwaukee, Wis.—E. A. Gilmore, 172 Twelfth street, has been appointed Wisconsin distributor of the Havers six line.

Des Moines, Ia.—The Strong Motor Co. has taken the Des Moines agency for the Firestone. The company now handles the Apperson, Winton and Firestone.

Boston, Mass.—The Stutz car is now represented in Boston, an agency for it having been opened last week by the Empire Motor Car Co. as an addition to its line.

Denver, Colo.—W. W. Barnett, Colorado, Wyoming and New Mexico representative for the Alco and Stoddard-Dayton cars, has assumed the Courier-Clermont agency for the same territory.

Grove City, Pa.—The Bessemer Motor Truck Co. has been formed at Grove City by I. M. Louis, A. M. Allen, L. M. Monroe, J. E. Marshall, E. J. Fithian and W. H. Shellits. It will have a large garage.

Chicago—J. A. Atwell has been appointed manager of the Chicago branch of the Fiat Automobile Co. He assumed his new duties in the western metropolis on August 23. For the last 2 years Mr. Atwell was manager of the New York branch of the Michelin Tire Co.

Laporte, Ind.—Laporte is to have another garage, a brick building at the corner of Clay and State streets to be erected for the use of William Heald. The building will be 40 by 115 feet and will be ready for occupancy in 2 months. Mr. Heald has the agency for the Ford.

Chicago—In addition to offices just opened at Minneapolis, Kansas City and Indianapolis, the Stewart & Clark Mfg. Co. is opening a new office at Cleveland, Ohio, at 1849 Euclid avenue, in charge of H. A. Ungar, who has been traveling that territory, to take care of the city of Cleveland.

Milwaukee, Wis.—The Bates-Odenbrett Auto Co., 503-507 Broadway, has been appointed state distributor for the White pleasure and commercial cars and the Abbott-Detroit line. The Overland line has been discontinued and will be represented by the Motor Car Sales Co., 136 Oneida street, Milwaukee, which will also represent the Marion.

Pontiac, Mich.—R. McCracken, who has for some time been in Pontiac, reorganizing the office, factory and accounting system of the General Motors plants, and at the same time acting as comptroller, will leave shortly for Detroit, where he will take an important position in the office of the General Motors Co. E. H. Tinsman, for several years assistant auditor of the Laclede Gas Light Co., of St. Louis, Mo., becomes the comptroller of the Oakland Motor Car Co. E. J. Ackerman, present office manager of the Carter-car company, will shortly take up his duties as comptroller of the Cartercar company.

Baraboo, Wis.—The Gollmar garage is erecting a new garage building to include a large repair shop. It will cost about $8,000.

Shawano, Wis.—The Frogner Auto Co. has been incorporated to succeed to the business of the Frogner Garage. The capital stock is $5,000, and A. G. Frogner, C. E. Dunn and E. M. Williams are the principal stockholders. Mr. Dunn will manage the garage.

Philadelphia, Pa.—Announcement has been made that the sales site and interests of Prescott Adamson, recently deceased, including representation for Philadelphia and vicinity of the Reo car, have been purchased by E. C. Johnson, to be conducted hereafter as the E. C. Johnson Co. The establishment at the northwest corner of Broad and Spring Garden streets will be thoroughly renovated and modernized.

Recent Incorporations

New York—Automatic Fender Co. of America, capital stock $1,000,000; to manufacture fenders, etc.; incorporators, William E. McGuirk, Saul S. Meyers and William W. Lowther.

New York—Mohr Auto Co., capital stock $25,000; to manufacture motor cars and parts; incorporators, Henry Mohr and Chas. Goldstein.

New York—Spring Tire Co., capital stock $8,000; to manufacture motor car supplies; directors, Henry B. Hill, William Ewrmann and William A. Crane.

Camden, N. J.—American Tire Protector Co., capital stock $1,000,000; to manufacture tire protectors, non-puncturable tires and motor car specialties; incorporators, Robert B. Watson, John P. Donahue and Robert St. John.

Summit, N. J.—Summit Garage Co., capital stock $3,000; to operate garage.

Hoboken, N. J.—Imperial Garage Co., Inc., capital stock $10,000; to operate garage; incorporators David M. Herbert, Ernest Rose and E. I. Herbert.

Camden, N. J.—Bergdoll Motor Co., capital stock $10,000; to deal in motor vehicles; incorporators, Frank R. Hansell, William T. Eidell and John A. MacPeak.

Boston, Mass.—Mallay Motor Vehicle Co., capital stock $50,000; to manufacture motor cars; incorporators, Charles Malley, M. Raymond Hatch and Louise M. Stucklen.

Chicago—Simplex Auto-Cranker Co., capital stock $100,000; to manufacture motor cars, supplies and machinery; incorporators, Edwin A. Gardner, Ignatius F. Halton, Willard Patrick and P. W. Rosenstone.

Chicago—Automobile Construction Co., capital stock $27,000; foundry and woodworking establishment; incorporators, Albert T. Graham, H. M. Wells, Wm. E. Fuller and George F. Mulligan.

Hopkinsville, Ky.—Cayce-Jones Motor Co., capital stock $10,000; to sell, store and repair motor cars; incorporators, L. M. C. Cayce, H. W. Dorris, A. B. McDonald and Thomas C. Jones.

East Orange, N. J.—Motor Truck Sales Co., capital stock $15,000; to manufacture motor cars; incorporators, H. S. Decker, Walter P. Maccabe and M. Zagat.

Indianapolis, Ind.—Macks Tire Filling Co., capital stock $6,000; incorporator, C. A. McCardle.

Muscogee, Okla.—Oklahoma Motor Wagon Co., capital $10,000; incorporators, C. T. Chenevert, Chris M. Bradley and F. E. Fancher.

Cincinnati, O.—Rambler Motor Co., capital stock $25,000; to operate a sales agency for all kinds of motor cars and to deal in supplies and accessories; incorporators, George H. Jung, F. D. Ratterman, Charles Reed, W. H. Kaufman and Walter C. Reed.

Toledo, O.—Toledo Annealing Charging Truck Mfg. Co., capital stock $10,000; to manufacture motor trucks; incorporators, John G. Blum, M. G. Blum, Joseph M. Rutherford, Edward F. Abbey and Rachael E. Rutherford.

Nashville, Tenn.—J. C. Chrienen, 1406 Nevada building, Nashville, agent for the Cole, has moved to 145 Third avenue, north.

Louisville, Ky.—The Radcliffe Motor Car Co., Third and Breckenridge street, Louisville, Ky., is the new distributor for the Cole in Kentucky and Tennessee.

Los Angeles, Cal.—The Brown-Symonds Co., 1140 South Olive street, has taken on the agency for the Stutz car built by the Ideal Motor Car Co., Indianapolis, Ind.

Detroit, Mich.—The Abbott Motor Co., of Detroit, Mich., has consummated a large contract with the W. M. Jenkins Co., 288 Columbus avenue, Boston, Mass., as distributor for New England for the Abbott-Detroit line.

Philadelphia, Pa.—The Tire Shop has removed from 1326 Vine street to larger and more suitable quarters at 225 North Broad street, in the heart of the row. David Scannell is the proprietor.

Pittsburgh, Pa.—A creditor's petition in bankruptcy was filed against the Liberty Auto Tire Supply Co., of Pittsburgh. Four creditors filed the petition, giving the aggregate amount of their claims at $1,442.21.

Denver, Colo.—The Fritchle Automobile and Battery Co., which manufactures the Fritchle electric at 1520 Clarkson street, has established a down-town sales department in the rooms of the Colorado Motor Sales Co., 1624 Broadway.

Louisville, Ky.—The Wilder Motor Car Co., with a capital stock of $5,000, filed articles of incorporation here last week. The limit of indebtedness was fixed at $10,000. The company intends to sell, repair and rent motor vehicles.

Portland, Ore.—Dulmage & Smith, Portland agents for the Elmore, Rapid and Reliance trucks, expect to complete within the next 60 days a new garage at 46 North Twentieth street. The building will be two stories, 50 feet front and 100 feet deep.

Brooklyn, N. Y.—E. J. Montigny, owner of the Plaza garage, Bedford avenue near Bergen street, who was formerly agent for the Abbott-Detroit, has closed contract with the Ideal Motor Car Co., of Indianapolis, Ind., for the sale of Stutz cars in Brooklyn and the balance of Long Island.

Buffalo, N. Y.—The firm of Baker Brothers, Geneva, N. Y., and E. H. Green, of Buffalo, N. Y., Cole distributors, have consolidated under the firm name of Baker Brothers Motor Car Co. The firm has taken quarters at 846 Main street. Baker Brothers will continue to sell Cole cars in Geneva, this branch being under the direction of Clarence Baker. H. H. Baker and B. H. Green will handle the Buffalo business.

Legal Lights and Side Lights

MILWAUKEE'S NEW RULES

UPON the insistent demand that traffic be regulated in the downtown section, the police department of Milwaukee, Wis., has inaugurated a system to govern traffic similar to that in vogue in other large cities. The rules in brief are:

All street cars, teams and motor traffic must stop before all street intersections.

One whistle from the traffic policeman is the signal for all east and west bound traffic to move, while north and south bound traffic stands still.

Two blasts of the whistle is the signal for all north and south bound traffic to move, while the east and west bound traffic must stand still.

While motorists were put to great inconvenience at times during the first few days that the new system was in effect, it is now realized that the new method is promoting safety and it is believed that the number of accidents in which motor cars are participants will be reduced to practically nothing. Previous to this time few people had any idea of the enormous motor traffic. During the busy hours there are at times forty to fifty cars lined up in double or triple rows waiting the blast of the whistle.

REDUCES TOLL CHARGES

The Wisconsin railway commission has taken a hand in the matter of the complaint of motorists and others in relation to the condition of the toll bridge and the rates of toll charged by the owners of the bridge across Sturgeon bay, in Sturgeon Bay, Wis. All motorists are obliged to cross this bridge to get to the summer resort country of Door county, Wisconsin. The commission orders the bridge company to place the bridge and the approaches in a safe condition at once. The rate of toll is reduced from 50 cents to 25 cents for the round trip and from 25 cents to 15 cents one way, the reduction applying to motor cars. Rates for other traffic are unchanged.

OKLAHOMA HAS A NEW ONE

The city commissioners of Oklahoma City, Okla., have adopted a new ordinance to govern the operations of vehicles that are propelled by other than animal power. The ordinance was drafted by Orvel Johnson, president of the Oklahoma State Automobile Association, and will take effect at once.

The ordinance provides that in case of accidents the driver of any kind of a motor vehicle who is connected with the accident in any way shall stop and give his name, number of license and address to any person requesting same. He shall also report the accident to the police headquarters.

The office of superintendent of motor vehicles is created by the ordinance, such officer to be appointed by the mayor, and who shall examine all applicants for licenses, compile all needful records and perform such other duties to make the department effective and protect the public and drivers of motor cars and vehicles. All the funds received from licenses shall be devoted to the improvement of Grand boulevard, the new 28-mile drive around the city.

HITS TAXICAB OPERATOR

A person who goes for a joy ride in a rented motor car and at the end of the trip tenders the chauffeur a check for the costs does not commit a crime if he has no money in the bank and knows he has not, according to the construction placed on the criminal code by Deputy Prosecutors Nolte and Burmeister of Pierce county, Washington. The case was one in which Joseph Christian took $100 worth of motor car riding in company with several friends, handed Frank Pratt, the driver, a check for the amount, Pratt subsequently finding Christian had no funds in bank.

MILWAUKEE FAVORS FIRE TRUCKS

MILWAUKEE, WIS., Aug. 29—The socialist city administration of Milwaukee has been making thorough investigation of the application of motor-driven apparatus for fire protection and it is probable that within a short time the common council will begin a systematic campaign to replace all horse-drawn equipment with trucks. Alderman Max Grass, chairman of the committee on fire department, is the leader of the movement, and his idea is to gradually substitute the truck for the horse in order to avoid overtaxing the city funds. Speaking of his personal investigation, Alderman Grass said:

"I find that where, for instance, the maintenance of a team of horses for a fire engine costs $46 per month, the upkeep of a motor-driven engine, making the same number of trips, is shown by experience of other cities to be about $21 per month. While the initial expense of installation is considerably more, this excess is overcome within a short time."

Within 3 months the city will be obliged to furnish two new sub-stations with apparatus, and it is proposed to take some of the horse-drawn equipment from the larger stations to supply the new ones. The large stations are then to be equipped with motor apparatus. It is believed that there will be no opposition, as Chief Thomas A. Clancy is an ardent advocate of the motor-driven fire apparatus.

At the annual convention of the International Association of Fire Engineers in Milwaukee, Wis., September 19 to 22, thirty-four pieces of motor-driven fire apparatus of all types will be exhibited by the manufacturers.

NUMBER DIES WITH CAR

The secretary of state of California, J. B. Jordan, has decided that the number of a motor car dies with the car for which it was originally issued. The secretary of state will establish a deputy in Los Angeles to issue licenses. This is done at the request of the Automobile Club of Southern California, which has a membership of 3,000. The Los Angeles deputy hereafter will issue licenses for the counties of Ventura, Los Angeles, Riverside, Orange, San Bernardino and San Diego. The total revenue to the state from motor registrations and chauffeur's licenses since the law went into effect has amounted to $151,375.50. This amount is made up as follows: 1905, $14,554.50; 1906, $13,403; 1907, $16,688.50; 1908, $16,718.50; 1909, $24,397; 1910, $36,951; 1911, 7 months, $28,662.50.

NOISE CRUSADE IN MILWAUKEE

Milwaukee motorists who own expensive warning signals are up in arms against an ordinance proposed by Alderman F. G. Bogk which would prohibit the us of any signals excepting the ordinary horn or bell. The anti-noise agitation also has found its way into the proposed ordinance, which says on this subject:

"It shall be unlawful for any person to operate any motor car, motor cycle or other similar motor vehicle without a sufficient modern and improved muffler to prevent noise, or with muffler open upon or along any public street within the corporate limits of the city of Milwaukee.

"Any person who shall operate such vehicle without.....muffler.....shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine not exceeding $25, or by imprisonment not exceeding 10 days in default of the payment of such fine."

TROUBLE AT DETROIT

Detroit motorists continue to run foul of the traffic cops, but the speed limits of 12 and 15 miles an hour in the business and residence portions, respectively, are now well observed.

A recent complication, however, has been the attitude of the village of Highland Park, north of Detroit, and, to all practical purposes, a part of the municipality. There, under the management of a suburban justice of the peace, a series of speed traps have been installed and is being operated for the benefit of the exchequer.